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FOCAL INFECTION AND SYSTEMIC DISEASE: A CRITICAL APPRAISAL

THE CASE AGAINST INDISCRIMINATE REMOVAL
OF TEETH AND TONSILS

CLINICAL LECTURE AT ST. LOUIS SESSION

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AND

W. PAUL HAVENS, M.D.

PHILADELPHIA

The concept of focal infection in relation to systemic disease is firmly established. The origin of many toxic or metastatic diseases may be traced to primary local or focal areas of infection. As examples, gonorrhea and gonococcic arthritis, furuncles and septicemia, tetanus and other self-limiting diseases may be cited. It is not surprising, therefore, that a similar relationship is thought to exist between various general systemic diseases of unknown origin and infections of the teeth, tonsils, nasal sinuses, appendix, gallbladder and cervix and infections elsewhere. Such a theory at least was elaborated and popularized chiefly after the publications of William Hunter and Frank Billings between 1910 and 1915. The enthusiasm thus aroused was further enhanced by the experimental work of Rosenow and others until focal infection with regard to infected teeth and tonsils seemed to be the cause of a great variety of diseases.

Our purpose in this inquiry is to test the validity of the theory and its application. We have reviewed many of the papers published since Holman's¹ critical discussion of 1928, in an attempt to gather evidence to show that the causative relationship of infections about the teeth and tonsils to systemic disease is unproved, and that the removal of teeth and tonsils in an effort to influence the course of systemic diseases is unjustified in the majority of cases.

"INFECTED TEETH"

As pointed out in a recent editorial,² Hunter's views as expressed in 1910 have been misinterpreted. He spoke chiefly of infections arising from ill fitting dentures and crowns, not of apical abscesses about pulpless teeth which now are usually regarded as "infected teeth." Nevertheless the belief that infections about the teeth give rise to much systemic disease seems to be supported by various data: (a) bacteriologic studies of teeth often give positive results, (b) roentgenograms

may show radiolucent periapical areas, (c) by inoculation experiments it seems possible to reproduce similar disease in animals, and (d) recovery occasionally occurs after the extraction of teeth. That most of these data have been subject to misinterpretation is made evident as follows:

(a) *Bacteriologic Studies of Extracted Teeth.*—Most of the bacteriologic studies dealing with infection in and about the roots of pulpless teeth are invalid because of the technical difficulties of preventing contamination during extraction.³ Since then, Burket,⁴ for example, found bacteria present in pure culture or in mixtures in the apical areas of 43 per cent of clinically normal teeth, tested with aseptic precautions. Streptococcus viridans was found in 89 per cent in pure culture or with other bacteria. Pure cultures were more often obtained from teeth with no periapical roentgenographic changes. Tunnicliff and Hammond⁵ and others⁶ found that many teeth with sterile surfaces showed Streptococcus viridans in the pulps. There is often no evidence of infection on microscopic examination of pulpless teeth and adjacent tissues even though bacteria are present, so that the mere presence of bacteria does not mean that they are pathogenic.

(b) *Roentgenologic Studies.*—In the search for foci of infection it is customary to make roentgenograms of the teeth. It is a common practice among roentgenologists to report an abnormal area of lucency around the root of a tooth as a periapical abscess. This custom alone has been responsible for the loss of many sound teeth since many such radiolucent areas are not caused by infection.⁷ It is impossible to estimate the pathologic significance of abnormalities by roentgenographic studies alone.⁸ Periapical restoration of bone and obliteration of areas of rarefaction may occur spontaneously if given time enough or after proper treatment of disease of the root canal or other defects, as shown by Sharp⁸ and in the accompanying illustration.

(c) *Inoculation Experiments.*—Most of the observations made on animals inoculated with bacteria recorded in studies of focal infection were reviewed by Holman¹ in 1928. He particularly dealt with the problem of elective localization of bacteria and concluded that the specificity of the bacteria involved has not been proved and that the theory of Rosenow is open to misinterpretation and limited in its practical application. His views have been further supported by the results of studies by Lehmann⁹ and by Valentine and Van Meter.¹⁰ Both Schottmüller¹¹ and Pette¹² advise that Rosenow's views of elective localization of bacteria be not only disregarded but actively combated.

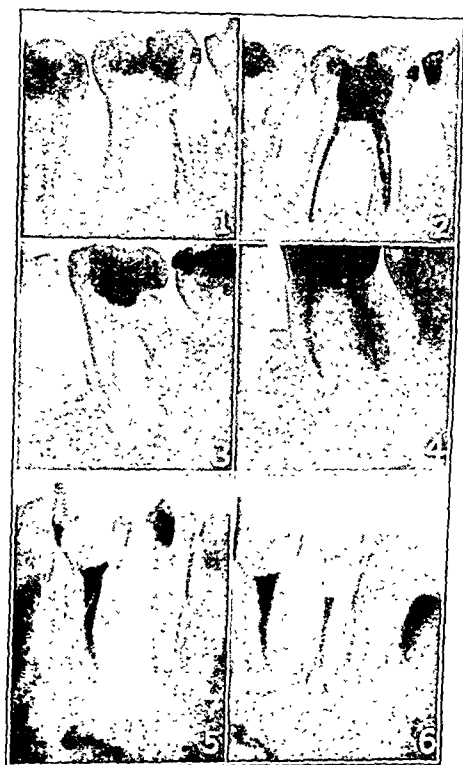
(d) *Effect of Tooth Extraction on Systemic Disease.*—Many authorities¹³ do not accept the reports of clinical improvement after the extraction of a tooth as proof

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Owing to lack of space, the bibliography is omitted here. The complete article appears in the authors' reprints.

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that infection arising from it was the cause of systemic illness. Many such recoveries are temporary and may result from psychic factors or the shock-like reaction which often follows such operations. No one doubts that prompt improvement occasionally occurs after the extraction of suspected teeth, but Broderick¹⁴ points out that more often the operation does not result in improvement, and this instead of halting the search often leads to further surgical attack on other suspected areas in a vain attempt to eradicate a focus. Many of the best authorities¹⁵ on arthritis oppose the removal of teeth for the treatment or prevention of arthritis. Among Cecil's¹⁶ fifty-two arthritic patients who had some or all of their teeth removed, no benefit occurred in forty-seven, and exacerbations occurred in three. In Bauer's¹⁷ series of 300 cases, those patients who were not subjected to operation have done better than those whose teeth were removed.



1. A girl aged 15, regarded as viscerotonic and anemic, had generalized parodontal disease with loosening of the teeth and a large cavity in the tooth, resulting in death of the pulp with rarefying osteitis of the apical region and parodontosis. 2. Twelve months later, after treatment of the tooth and the use of general hygienic measures, the area of rarefaction has disappeared. 3. A woman aged 42 was told that an abscessed tooth might account for apprehensiveness, depression and vague pains noted during the menopause. She refused to have the suspected tooth extracted. 4. It was treated conservatively, and after eight months another roentgenogram showed restoration. 5. A woman aged 23 had a pyogenic infection of the skin thought to be associated with two pulpless teeth and a large area of rarefaction. 6. The patient refused to allow extraction, and twelve months after treatment of the root canals a second roentgenogram showed regeneration of bone. Roentgenograms by courtesy of Dr. John H. Gunter.

Frankel¹⁸ examined a large group of persons with supposedly good teeth and compared them with persons who had "heavy dentistry." The percentage of disease was no greater in one group than in the other. Broderick¹⁴ examined numbers of patients with arthritis and allergic diseases and found that in most cases all of the teeth had been removed without evident effect on the disease. Kerr¹⁹ believes that the practice of wholesale removal of teeth for suspected foci has been overdone. Leiter²⁰ states that alleged foci of infection in the teeth have no clearcut relation to nephritis.

Levine²¹ is unconvinced of the causative relation infected teeth to rheumatic heart disease. Pemberton states that many persons with arthritis are still undergoing unnecessary mutilation as far as teeth are concerned. Many sound and useful teeth are being extracted, jeopardizing the comfort and health of the victim through failure of satisfactory mastication. Many ophthalmologists, on the other hand, feel that about one third of cases of iritis are due to focal infection, yet little or no proof exists for this belief, except the improvement which occasionally follows the extraction of teeth. As Verhoeff stated, "Belief in focal infection must be taken like religion, on faith."

We agree with Anderson,²² of the Dental Study Group at Yale, that practitioners at present have no satisfactory basis for determining whether a tooth is actually harboring infection or not.

Harmful Effects of Extraction of Teeth.—The extraction of teeth is not without danger. Since bacteria reside around the gingival margins of all teeth and in the periapical regions of many, there is every reason to suspect that the trauma of operation may force these bacteria into the tissues and blood. The studies of Okell and Elliott²⁴ are of especial interest in this regard. They made blood cultures immediately after tooth extraction in patients with obviously infected mouths and recovered *Streptococcus viridans* in 75 per cent of cases and in 34 per cent of those with apparently healthy mouths. Other observations²⁵ support these. Although bacteremia is usually harmless, many instances of fatal and nonfatal systemic infection and relapse of disease are recorded after the extraction of teeth.²⁶

Abscess in the lung occasionally follows the aspiration of blood, tissue or fragments of bone or teeth during or after the extraction of teeth, especially when the patient is anesthetized. According to King and Lord,²⁷ 12 per cent of a group of 227 cases of lung abscess studied followed extraction of teeth.

THE TONSILS

In a period between 1928 and 1931, one third of all surgical operations performed in a group of nearly 40,000 cases were for tonsillectomy.²⁸ Glover,²⁹ who has made extensive studies of the problem in England, estimates that 200,000 tonsillectomies are performed annually in England and Wales. It may be inferred that in many cases financial considerations play a role since the operation is three times as common among the well-to-do as among the poor. In Collins's²⁸ study in this country the operation rate was about double in families with large incomes as compared with poor ones. If the procedure is to continue on such a scale there ought to be indisputable evidence of its value to justify it. Such evidence does not exist.³⁰

The diseases for which tonsillectomy is especially advised as a preventive or curative measure are "infected tonsils," chronic tonsillitis, rheumatic fever, rheumatoid arthritis, colds, subacute bacterial endocarditis and nephritis. The list of diseases for which the operation has been recommended is long. A few of the more commonly mentioned ones are rheumatic pains, myalgia, neuritis, inflammatory diseases of the eye, sinusitis, heart disease, hypertension, arteriosclerosis, peptic ulcer and ulcerative colitis, practically all of them, it may be pointed out, of unknown origin.

"Infected Tonsils."—There are no standards whereby one can judge whether tonsils at any given period of life are normal or not. In the usual sense of the term,

tonsils are regarded as "infected" when they are large, scarred, small, adherent, when the crypts are plugged with caseous material, or when various forms of streptococci can be cultivated from them. These criteria are unreliable. Tonsils such as those described are often present in otherwise healthy and normal people, as well as in persons with every sort of ailment.³¹ Kaiser³² found hemolytic streptococci in 40 per cent of extirpated tonsils, yet no symptoms were present in the children deprived of these tonsils. Streptococcus viridans has often been suspected of pathogenicity, yet Broderick¹⁴ observes that it is a saprophyte found in the mouth within a few hours after birth which remains throughout life. Nonhemolytic streptococci are often found in human tissues post mortem.³³

According to Long,³⁴ abscesses of the tonsil were seldom seen histologically in studying 2,000 pairs of extirpated tonsils. Hyperplasia and hypertrophy were common in youth, scarring and atrophy in adult life, and superficial erosions with exudate in the crypts were present in most. Neither Kaiser nor Epstein³⁵ believes that by inspection a physician can generally tell if a tonsil is chronically infected or not. The physiologic enlargement of tonsils in childhood should not be mistaken for disease.

Tonsillitis.—There seems to be general agreement that the tonsils should be extirpated in persons subject to repeated attacks of acute tonsillitis or peritonsillar abscesses. The good results which follow operations for these reasons justify the procedure. The prevention of further attacks of acute tonsillitis in persons who have had attacks of rheumatic fever, nephritis and certain other diseases, it is claimed, diminishes the liability to relapse or recurrence.

Acute Rheumatic Fever.—The frequency with which acute rheumatic fever is preceded by an attack of acute hemolytic streptococcus tonsillitis suggests to many an etiologic relationship of the bacterium to rheumatic fever. According to various investigators,³⁶ however, from 25 to 90 per cent of cases of rheumatic fever or recurrences are preceded by conditions other than acute infections in the respiratory tract or tonsillitis. Tonsillitis and pharyngitis are not consistently followed by recurrence of rheumatic fever in subjects likely to develop the disease.³⁷ From a statement in the preceding paragraph, tonsillectomy in patients subject to tonsillitis would seem to be indicated as a prophylactic measure, yet Davis³⁸ does not believe that the tonsils are significant foci of infection for the disease. If they were, he believes, the number of tonsillectomies performed during the past twenty years should have reduced the incidence of rheumatic fever by now. It must be said, however, that other studies³⁹ have shown a diminished incidence of the disease, but the cause for it is not clear.

Numerous comparisons have been made between groups of children who have tonsils and those who have not. In 1923 Hunt and Osman⁴⁰ found that the number of recurrences of rheumatic fever was not reduced by tonsillectomy; in fact, recurrences were more common in those operated on. Other observers also found that recurrences are not reduced by tonsillectomy.⁴¹ Archer⁴² found that those patients who had had their tonsils removed were just as apt to have a preceding infection of the respiratory tract as those who still had their tonsils. Some observers

children to rheumatic fever. It is pointed out,⁴⁵ however, that one is apt to find a higher incidence of rheumatic fever among tonsillectomized persons because of the routine practice of tonsillectomy for the disease. The studies of Kaiser⁴⁶ and of Ash⁴⁷ are of particular importance. Both were unable to show a significant reduction of the initial infection, recurrence or subsequent heart disease in tonsillectomized children, although Kaiser advises the operation as a prevention against recurrence because of the slight apparent advantage (2 per cent) possessed by tonsillectomized children.

In the face of much evidence to the contrary, reports⁴⁸ occasionally appear claiming beneficial effects from prophylactic tonsillectomy, but it is noteworthy that these studies are insufficiently controlled or not controlled at all.

Rheumatoid Arthritis.—More tonsils are extirpated from adults in an attempt to relieve "rheumatic" pains than perhaps for any other reason. This is especially true in the entity called rheumatoid arthritis, for which tonsils are often removed as a matter of routine in spite of the fact that there is no evidence of the specific value of the procedure. There have been no studies made with adequate control, few clinicians are familiar with the natural course of the untreated disease,⁴⁹ and but little is said of the actual harm which may result from the operation.

In recent years much evidence has accumulated throwing grave doubt on the practice of removing tonsils or teeth in the hope of preventing the onset or influencing the course of rheumatoid arthritis. Many of those who have had extensive experience with the disease are growing skeptical of the bearing of focal infection on the disease or never did accept the theory. Pemberton's cases did not present much evidence to favor it, for among 400 recovery occurred in 46 per cent without operative attack on supposed foci of infection, while after operation recovery occurred in 16 per cent. As in the case of rheumatic fever, other factors besides infection may precede an acute attack or relapse of rheumatoid arthritis. According to Cobb, Whiting and Bauer,⁵⁰ environmental conditions and emotional stress were the apparent incitants in 66 per cent of fifty cases. A statement by the American Committee for the Control of Rheumatism⁵¹ is of interest: "Patients with atrophic (rheumatoid) arthritis are usually poor physical specimens and often underweight. Many of them suffer from cold hands and feet and other vasomotor disturbances long before arthritis makes its appearance." Furthermore, it is important to recall that in rheumatoid arthritis about 25 per cent of patients "recover," 50 per cent improve and 25 per cent get worse no matter what type of treatment is used.⁴⁹

Hench⁵² points out the almost uniform absence of localized infection in children with rheumatoid arthritis. Dawson⁴⁹ only occasionally found evidence suggestive of the etiologic significance of focal infection and even in these few cases the evidence was far from conclusive. He, Steindler⁵³ and Wetherby⁵⁴ assert that foci of infection are not any more frequently encountered in rheumatoid arthritis than in other diseases or in normal people. Ten per cent of Wetherby's patients had relapses after operation on the teeth or tonsils. Shapiro⁵⁵ rarely sees a patient with arthritis who has not already had every accessible so-called focus of

whose supposed foci of infection have been left untouched. Cecil⁵⁰ in 1933 wrote "the keystone of the modern treatment of rheumatoid arthritis is the elimination of infected foci." After longer study he and Angevine (1938) stated¹⁶ that in no instance was the course of the disease altered or the patient cured when supposed foci were removed. Tonsillectomy had no beneficial effect in eighty-six cases and caused severe exacerbation in two and temporary improvement in four. Cecil now believes that focal infection plays a comparatively unimportant role in the disease. Bauer⁵¹ is convinced that focal infections play no role in the causation of rheumatoid arthritis. McCollum⁵² noted no benefit in seventy patients after tonsillectomy as compared with patients not operated on. Hurd's⁵³ experience was similar, but he incriminated the nasal sinuses instead of the tonsils. Others minimize the importance of the sinuses as foci of infection.^{50a}

From the authoritative opinions given it is obvious that at present no final conclusions can be formed as to the relation of focal infections to rheumatoid arthritis.

Other Conditions.—Kaiser⁶⁰ in a ten year follow-up study on several thousand children concluded that the incidence of acute colds, otitis media, bronchitis and pneumonia is not lessened by tonsillectomy; in fact, certain conditions occurred more often after tonsillectomy. Complaints of frequent colds, hoarseness, attacks of fever, nosebleed or headaches were not improved by the procedure. The outstanding benefit was the reduction of the incidence of tonsillitis and sore throats, which may indirectly reduce the incidence of rheumatic fever, nephritis and arthritis. Cunningham⁶¹ in a study of 14,000 students found less evidence of damage to the mitral valve among students with normal tonsils than among those whose tonsils were absent or pathologic. The group without tonsils had history of a higher incidence of all illnesses and operations than did those with normal or pathologic tonsils, but this may indicate only that those who are often ill are most frequently operated on. There was little or no difference in the incidence of measles, mumps, scarlet fever, diphtheria, chickenpox, whooping cough, rheumatism, pneumonia, pleurisy and chronic colds whether the tonsils were normal or pathologic. In other groups,⁶² students with nasal obstruction or "infected" tonsils were not especially susceptible to colds, and tonsillectomy had no influence on the incidence of scarlet fever.⁴³ Anderson's⁶³ experience in life insurance examinations shows that there is no appreciable difference in mortality from heart disease in persons with or without their tonsils.

In an investigation of 30,000 school children, a British commission⁶⁴ found that the incidence of colds, coughs and sore throats in those with or without their tonsils did not differ, yet about one half of all children examined had had their tonsils removed. They conclude "that there is a tendency for the operation to be performed as a routine prophylactic ritual for no particular reason and with no particular result." They have grave doubts whether the majority of tonsillectomies performed today are the result of true discrimination rather than of routine ritual. Numerous other observers⁶⁵ have likewise expressed skepticism as to the results obtained from tonsillectomy.

According to Glover, Ash's vigorous campaign in Derbyshire reduced the number of tonsillectomies from 1,187 in 1932 to 164 in 1937, yet no increase in the

incidence of sore throats, colds, deafness or otitis media was noted. Anderson⁶⁶ replies that the reduction in number of operations on the throat in certain communities reported by Glover is brought about because of the diminution of throat ailments calling for operative treatment. If tonsillectomy is harmful, a reduction of unnecessary operation he argues should result in improved child health. Anderson also suggests that the variation of number of tonsillectomies performed in a given locality from year to year reflects a genuine variation of the need for the operation. One is at a loss, however, to know what changing indications may arise from year to year to control the need for tonsillectomy.

Ellis and Russell⁶⁷ studied 4,000 Basque children moved to England to escape the Spanish War. Less than 2 per cent of these children had had their tonsils removed. Many tonsils were as large as walnuts but the incidence of cervical adenitis and otorrhea was only 0.4 per cent. The incidence of obvious infection or obstruction of the respiratory tract was low as compared with British children who had had their tonsils excised.

Harmful Effects of Tonsillectomy.—It is often stated⁶⁸ or implied that tonsillectomy is a harmless and safe procedure. This is not always the case.⁶⁹ It is true that published statistics often show a surprisingly low mortality rate as a direct result of the operation, but in many instances the patients are not followed for more than a few days after operation. It is known⁷⁰ that many cases of pulmonary abscess never come to the knowledge of the surgeon; some of them are recognized months later by another physician. Published statistics usually originate from large well equipped hospitals or from the hands of surgical experts. The final conclusions no doubt would be far different if one could learn the results of tonsillectomies performed by novices or by the inexpert. It is not uncommon for interns to perform the operation during the rush period on "tonsil days" in certain hospitals. Furthermore, although it is often asserted that the death rate from anesthesia during tonsillectomy is exceedingly low, in 1924 Collins and Sydenstricker⁴⁵ found that among children between the ages of 5 and 14 in the registration area there were forty deaths from anesthetics, and of these 57 per cent were given for tonsillectomy. In the registration area of the United States in 1924 there were 474 deaths from anesthetics, 16 per cent of which were given for tonsil and adenoid operations. The subsequent years have no doubt brought about improvements in technic to reduce these accidents but the danger remains. The Registrar-General's Statistical Review from England for the years 1931 to 1935 gives enlarged tonsils and adenoids as the cause of death of sixty children, while 513 deaths resulted from tonsillectomy. It is estimated that eighty-five deaths occur annually as a result of tonsillectomy in children under 15.⁷¹

In discussing the etiology of pulmonary abscess, Norris and Landis⁷² list operations in the nose and throat under general anesthesia, particularly tonsillectomy, as first among the most frequent causes. From 40 to 60 per cent of lung abscesses follow tonsillectomy and other oral operations.⁷³

Tonsillectomy, like extraction of teeth, may lead to temporary bacteremia,⁷⁴ and in certain cases to subacute bacterial endocarditis.⁷⁵ Nesbit⁷⁶ recorded the development of complications in 7.5 per cent of children operated on as outpatients and in 2.2 per cent of private

patients. Numbers of cases of poliomyelitis⁷⁷ have developed shortly after tonsillectomy. Numerous other conditions, diseases and relapses may be precipitated by tonsillectomy.⁷⁸

COMMENT

There is much opposition to the routine practice of removing teeth and tonsils as foci of infection to influence general symptoms. It is clear that the concept of focal infection, in this respect, is not an established fact as it is often claimed or believed to be.⁷⁹ Nevertheless the theory is still strongly defended by many perhaps because, as Kant says, "certain things repugnant to the reason find acceptance among rational people simply because they are universally spoken of."

Pepper⁸⁰ as early as 1926 thought that the theory was being carried too far and in its pursuit enormous numbers of teeth and tonsils were sacrificed by expensive and sometimes dangerous procedures. He wondered whether the surgical accessibility of teeth and tonsils was not partly to blame for the tendency. Hamman⁸¹ stated that never before, at least in modern times, has a theory of disease so captured the imagination of the profession. Kinsella⁸² does not believe that any secure evidence exists to associate infected teeth or tonsils with focal infections such as chronic rheumatism. Bauer⁸³ recognizes no systemic disease caused by focal infection in the sense of the term used here except for an occasional septicemia resulting from complications which might follow a periapical abscess, particularly after extraction of a tooth. Because the etiology of a certain disease is unknown is no reason why the cause should be ascribed to focal infection. Cecil and Angevine¹⁶ say that focal infection is a splendid example of a plausible medical theory which is in danger of being converted by its too enthusiastic supporters into the status of an accepted fact. The time has come, they believe, for a complete reevaluation of the theory of focal infection. Bloomfield⁸⁴ regards the procedure to be now hardly more than a gesture or the remnant of a habit which enables one to do something in chronic cases in which there is so little to do.

It is generally admitted that occasional improvement does occur after operation on supposed infected areas, and many physicians are able to recite their own experiences of prompt relief of this or that complaint after the extraction of a tooth or after tonsillectomy. Such examples suggest, but by no means prove, an etiologic relationship. One can never be certain whether recoveries, especially spectacular ones, occurring often a few hours after operation are not partly due to faith, chance, coincidence of spontaneous cure or to nonspecific factors, or whether the same degree of improvement might not have been brought about by less drastic or less dangerous methods. The old dictum "after it, therefore because of it" should not mislead one. It is probable that the occasional recoveries which occur are equaled or even outnumbered by instances of immediate or delayed harm which may follow operative procedures in the form of hemorrhage, septicemia, lung abscess, other grave systemic disease and even death, as discussed previously in this paper. One more easily remembers prompt successes than delayed failures.

There are few reliable criteria for deciding whether or not teeth or tonsils are chronically infected and fewer to prove their relationship to systemic disease. Without local pain, tenderness, swelling, sinus formation or

lymph node swelling, a roentgenogram alone cannot be relied on to diagnose periapical abscess or periodontitis. Decreased density about the root of a tooth is no more proof of infection there than is increased density in the case of the nasal sinuses. The cultivation of bacteria from teeth gives little information, since the bacteria usually present have no proved relation to the diseases usually dealt with in this regard.

As far as the tonsils are concerned it is equally difficult on inspection to decide whether they are "infected." Ragged or enlarged tonsils, the expression of "pus" from the crypts and the cultivation of bacteria from them do not necessarily indicate inflammation. Bacteria can always be found on the mucous membranes, and the cheesy material usually found in the crypts is pus only to the extent that it is liquid and composed of cell detritus, desquamated epithelium, leukocytes and bacteria. It is no more the result of inflammation than other similar cheesy material which may be scraped from the crypts of other less accessible portions of the gastrointestinal mucosa. It is just as unimportant in most instances to consider that the tonsils are infected as to recall that the colon is swarming with bacteria.³¹

We believe that the chief criteria for a diagnosis of chronically infected tonsils are (a) persistent redness of the tonsils and adjacent membranes and exacerbations of acute inflammation often with pain or discomfort on swallowing with or without regional lymph node swelling and tenderness, (b) systemic signs and symptoms such as fever, leukocytosis and rapid red blood cell sedimentation, or (c) swelling, pain or tenderness of the lymph nodes which receive tonsillar lymph. In other words there ought to be some clinical or other evidence of actual inflammation of the tonsils before they are regarded as infected.

Even if the tonsils were implicated in the problem of focal infection, it is difficult to see why other lymphoid tissue in the nasopharynx, trachea, bronchi, lungs, intestine, appendix, gallbladder, cervix and elsewhere should not also be involved, yet efforts at removal are almost solely confined to accessible tonsil and adenoid tissue. Several other pertinent questions may be raised.

(a) Unless some peculiar relationship of chronically infected teeth or tonsils pertains to systemic disease there seems to be, with few exceptions, as little justification for their removal as there is in the case of the primary focus of chronic tularemia, glanders, anthrax, tuberculosis and of other specific chronic infections with which surgeons have long since ceased to tamper. (b) If the probable incidence of general or systemic infection resulting from acute or chronic infections of the teeth or tonsils was no greater than similar infections resulting from urethral gonorrhea, for example, less than 1 per cent of patients would be afflicted. Furthermore, it is not generally accepted that *Streptococcus viridans*, the bacterium most frequently incriminated, has anything to do with the conditions usually discussed in this respect, excepting subacute bacterial endocarditis. (c) If, as some would have us believe, chronically infected teeth or tonsils are so often accompanied by evidence of systemic localization and disease, why does not similar disease more frequently accompany or follow other instances of chronic focal infection with enclosed pus such as, for example, chronic bronchiectasis, chronic lung abscess or chronic infections of bones? (d) It may also be pointed out that many patients with chronic arthritis, "rheumatic

pains," nephritis or acute rheumatic fever do not have demonstrable areas of focal infection, and that conversely many persons with known chronic periapical abscesses or periodontitis, repeated attacks of tonsillitis or other focal infections do not have systemic disease. There is no constancy of relationship.

It has already been observed that many patients with arthritis or other rheumatic-like pains are often subnormal to begin with or become so from the effects of chronic illness.⁸⁵ In such persons the teeth,⁸⁶ the tonsils and perhaps many other tissues and organs are adversely affected or become infected or at least infected appearing as a result of diminished resistance. Such local evidence of disease often disappears if recovery from the general disease ensues. The tonsils, particularly in malnourished, underweight or otherwise subnormal children, probably would become "normal" in appearance spontaneously if the general health were improved by hygienic measures.

CONCLUSIONS

A review of the case against routine extraction of teeth and tonsillectomy for the purpose of preventing or curing systemic disease shows that the experience of twenty-five years has not justified the practice in the minds of many who have given the matter careful thought. The reasons advanced in favor of the procedure lack controlled clinical and experimental support. By comparing the occasional benefit obtained with the dangers incident to operation, one is led to recommend the procedure only in exceptional cases when evidence of actual local disease is present and its relation to remote or systemic disease probable.

If abscess or chronic infection around a tooth is present with reasonable certainty or if the tonsils are actually infected and give rise to repeated attacks of illness, there is no question that surgical measures are necessary in treatment of the local condition. But, in the light of present knowledge, the removal of such local infections in the hope of influencing remote or general symptoms and disease must still be regarded as an experimental procedure not devoid of hazard.

It may be said, therefore, that: (a) The theory of focal infection, in the sense of the term used here, has not been proved, (b) the infectious agents involved are unknown, (c) large groups of persons whose tonsils are present are no worse than those whose tonsils are out, (d) patients whose teeth or tonsils are removed often continue to suffer from the original disease for which they were removed, (e) beneficial effects can seldom be ascribed to surgical procedures alone, (f) beneficial effects which occasionally occur after surgical measures are often outweighed by harmful effects or no effect at all, and (g) many suggestive foci of infection heal after recovery from systemic disease, or when the general health is improved with hygienic and dietary measures.

The First and Last Must Be Clinical.—Knowledge that is to be applied usefully to the health of mankind will almost always come by a series of steps, the first of which is the recognition of the human need, the last of which is the application of a test directly to the human problem. It is in the nature of things, however many steps may intervene, that the first and last must be clinical; as it is also in the nature of things that almost all important physiological discoveries that are immediately applicable to the treatment of disease have their original source in clinical observation.—Lewis, Sir Thomas: *Research in Medicine and Other Addresses*, London, H. K. Lewis & Co., Ltd., 1939.

TREATMENT OF URETERAL CALCULUS

WITH PARTICULAR REFERENCE TO TRANS-
URETHRAL MANIPULATION

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No method has yet been developed to anticipate and prevent the formation of a ureteral calculus. Despite the present knowledge of the chemistry of urinary excretion and of methods of preventing the reformation of stones, the urologist is still keenly cognizant of the lack of positive and practical data pertaining to their causation. The importance of frequent contributions to the problem of causation is apparent, for as a result of these the solution may suddenly appear and only in its simplicity cause astonishment.

In recent years the most popular hypothesis of the causation of stone in the urinary tract includes hyper-



Fig. 1.—A group of ureteral calculi in the lower end of the left ureter; they were removed by transurethral manipulation.

parathyroidism, vitamin deficiency, infection of the urinary tract by urea-splitting organisms, urinary stasis due to a variety of causes, and local disease involving the renal papillae. The validity of any of these being an etiologic factor in rare cases is indisputable but for the large majority of cases there is still no satisfactory explanation. The unknown factor remains to be found and the majority of urologists, while hoping for its discovery, will concern themselves in the meantime with what to do about a urinary calculus after it has formed.

In 1930 Bumpus and Thompson¹ reported a series of 1,001 cases of ureteral calculus. That article called attention to the importance of accurate diagnosis in order to avoid unnecessary operations, particularly appendectomy, commented on the opinions of various authorities on transurethral manipulation and reported the results of transurethral treatment in several hundred cases.

From the Section on Urology, the Mayo Clinic.

Read before the Section on Urology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. Bumpus, H. C., Jr., and Thompson, G. J.: *Stones in the Ureter*, Surg., Gynec. & Obst. 50: 106-109 (Jan.) 1930.

It is our present purpose to review the subject again and report the experiences encountered and results obtained in a series of 361 cases of ureteral calculus in which transurethral manipulation was done during the interval from Jan. 1, 1930, to Dec. 31, 1938, inclusive. This number, of course, does not include all the cases of ureteral calculus seen during that interval of time. An almost equal number were treated expectantly either because of the small size of the stone, the lack of symptoms, the existence of inoperable malignant neoplasms in other organs or the apparent possession of a peculiar ability to pass stones spontaneously, or because, for fancied physical, social, economic and sometimes undisclosed reasons, the patient refused to follow advice given. For an almost identical number of cases ureterolithotomy was advised rather than transurethral manipulation. Open operation was advised in these several hundred cases for many reasons, including the size of the stone, its position in the ureter, the duration of symptoms, the mental attitude of the patient, the amount of time available for removal of the stone, the condition of the kidney and other reasons too numerous to mention.

Suffice to say that each case of ureteral calculus presents a different problem and if the patient is to be served best no hard and fast rules can be laid down, though there probably exist certain general principles on which advice should be based. It is apparent therefore that the results reported in any series of cases are subject to the criticism that they are not truly representative of results which might be obtained in some other locality by somewhat altered methods of treatment. With this there can be no disagreement.

The series of 361 cases considered in this article is composed of all cases in which any transurethral manipulation of a ureteral stone was done with the exception of simple diagnostic ureteral catheterization. It is well known that many patients will pass a ureteral calculus spontaneously after its axis has been turned by ureteral catheterization. We have not included such cases in this series. It should be emphasized that probably the majority of ureteral calculi are passed without the aid of a urologist, for many of our patients reported passing several to a number "too many to count" before one finally formed which stuck in its transit through the ureter and caused the visit to the clinic. It is therefore quite apparent that, aside from relieving pain with the proper sedatives or narcotics, the physician called on to treat a patient suffering with a ureteral calculus has no grave emergency on his hands in an overwhelming majority of instances. The existence of anuria and advanced uremia is probably the only exception to this general rule.

We shall not try to discuss the various interesting phases of the problem of which method of treatment should be selected for any particular group of cases of ureteral calculus. Each case presents an individual problem and without doubt different observers would vary in their opinion of the proper form of treatment.

Probably the size of the ureteral calculus is of most importance in any given case, though individuals will be encountered who will present for inspection quite large calculi which they have passed spontaneously. Of the 361 cases in which transurethral methods of treatment were done, in 28 per cent there were stones which measured 5 mm. or less in their greatest diameter, in 19 per cent the diameter varied between 5 and 10 mm., in 46 per cent from 1 cm. to 2 cm. and in 2 per cent slightly above 2 cm., while in 5 per cent the size was unfortunately not recorded. The review of these

cases emphasizes the opinion expressed² before: that of greater importance than the size of the stone, when considering transurethral methods of removal, is the size of the ureter in which it lies. It is a relatively easy matter to pass catheters or extractors alongside a stone contained in a large ureter and often an impossibility to pass a catheter alongside a tiny stone in an undilated ureter. Things which prevent ready access to the ureter, such as an enlarged prostate gland, a fixed

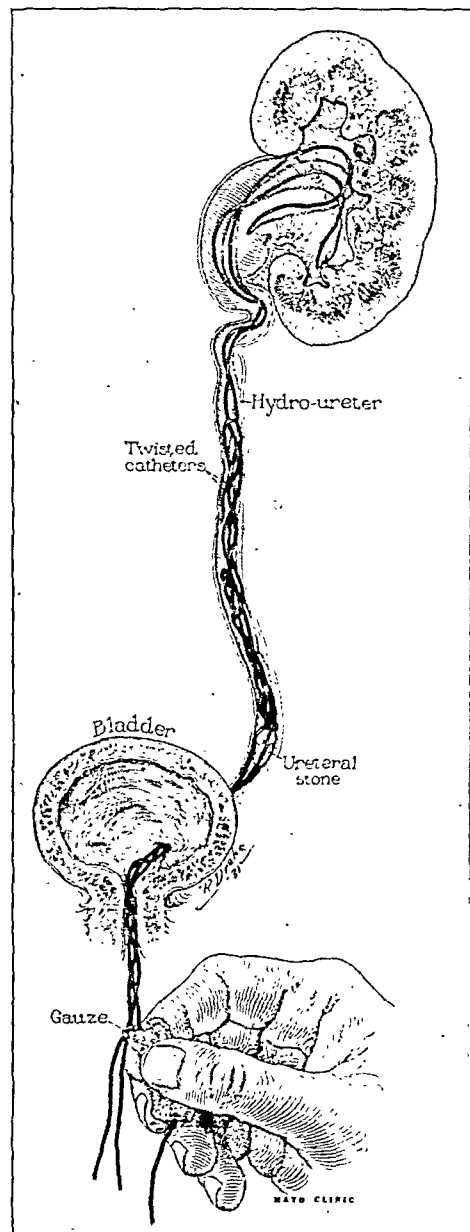


Fig. 2.—Multiple catheter method of extraction of ureteral calculus. The catheters are passed alongside the stone and then twisted, causing them to coil above and around the calculus.

hip, a marked urethral stricture, pelvic tumors, uterine fibroids or pregnancy, might affect a decision to manipulate a stone even though on the basis of size of the calculus alone the case might seem a suitable one for this procedure.

The position of the stone is of some importance in considering the advisability of transurethral manipula-

2. Thompson, G. J.: Stone in the Ureter: Methods of Diagnosis and Transvesical Removal, Wisconsin M. J. 35: 802-804 (Oct.) 1936.

tion. As a general rule it is wise to let the stone descend to the lower third of the ureter, though we have in some instances removed stones from the ureteropelvic junction and from within the renal pelvis. With few exceptions, if the patient is unwilling to wait for the stone to descend, a ureterolithotomy done through a lumbar

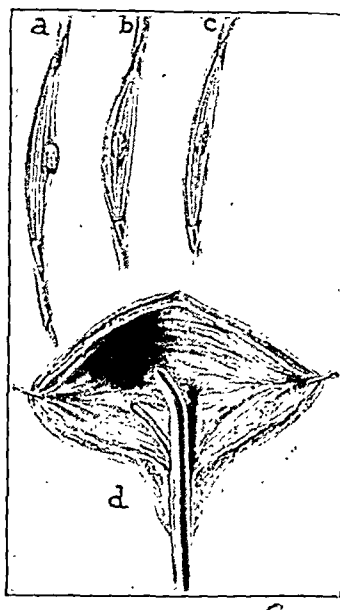


Fig. 3.—The Councill extractor; a, extractor alongside the calculus; b, the wires are expanded, thus enmeshing the calculus; c, the wires are contracted around the calculus. (From Councill, W. A.: A New Ureteral Stone Extractor and Dilator, J. A. M. A. 86: 1907-1908 [June 19] 1926.)

After the stone has reached the lower third of the ureter and caused some ureterectasis it may lie there for weeks or months, causing intermittent colic of varying severity and yet never engage in the intramural portion of the ureter. Beyond any doubt the most diffi-

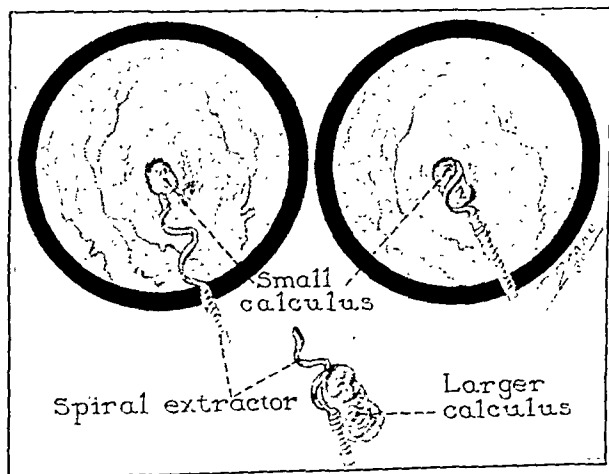


Fig. 4.—The spiral dislodger is effective for small calculi impacted in the ureteral meatus. Sometimes larger calculi can be engaged well within the ureter.

cult portion of the ureter for a stone to traverse is that few centimeters near and in the wall of the bladder.

When the stone is situated just above or within the bladder wall the chances of removing it by manipulation are usually good (fig. 1). In most instances when the stone is located in the upper two thirds of the ureter it is best to rely on its spontaneous descent

rather than try transurethral manipulation. The passage of a catheter or injection of oil into the ureter occasionally will speed the descent of the stone but there is some risk of introducing infection. Therefore, as was true in many of the cases seen at the Mayo Clinic, ureterolithotomy is preferable to spending two or three or more weeks waiting for the stone to get down to a position favorable for transurethral manipulation. During the interval before stated, 392 ureterolithotomies were performed, twenty-five of these being done after transurethral methods had failed. However, in fairness to the transurethral method it should be stated that twenty of the twenty-five patients elected to proceed with the operation either the same day on which transurethral methods were tried or within a few days thereafter. The other five patients were subjected to ureterolithotomy after there was little or no hope of removal of the stone by the transurethral route.

We are agreed that transurethral manipulation of a ureteral calculus either with multiple catheters or with any of the various extractors is a hospital procedure and

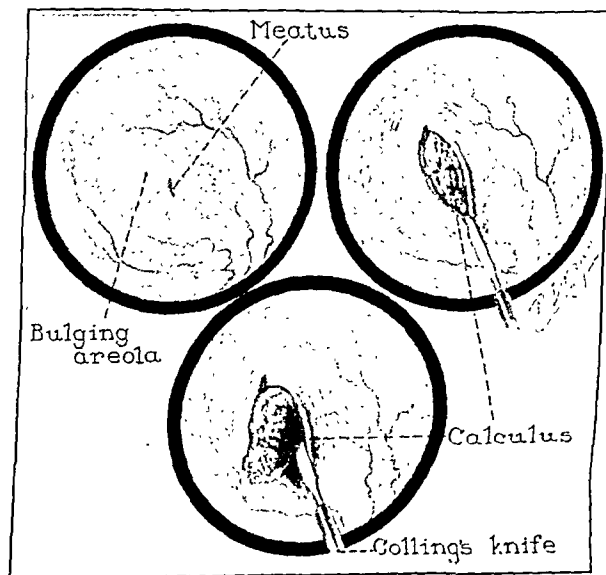


Fig. 5.—Method of exposing a ureteral calculus impacted in the lower end of the ureter by incision with the electric knife.

should never be done in an office. Ureteral catheterization, injection of oil and dilation of the ureter with small bulbs are permissible office methods but we seldom employ them and prefer manipulation in the hospital.

The use of an anesthetic such as pentothal sodium given intravenously is wise practice, for ureteral spasm which will defeat one's efforts will generally develop if an attempt is made without an anesthetic.

Prior to several years ago the multiple catheter method (fig. 2) was generally employed at the Mayo Clinic in the majority of cases. However, in recent years the Councill extractor (fig. 3) has been the favorite instrument, while the Johnson extractor of somewhat similar design has during the last year been used in an increasing number of cases. The spiral stone dislodger is particularly effective for small stones impacted in the ureteral meatus (fig. 4). Larger stones lying within the bladder wall can be exposed and dislodged nicely with the Collings knife (fig. 5). Other miscellaneous extractors were used in a few cases.

At this point it seems wise to state that even the most experienced cystoscopist should be extremely

gentle with any of these extractors and further, and what seems most important, efforts to remove a stone with them should not be continued for more than a few minutes. We employ the direct vision Braasch cystoscope, through which the extractor can be pushed directly and any resistance to the passage of the instru-



Fig. 6.—Calculus enmeshed within the Councill extractor. A urethral catheter has been inserted to drain the urine from the bladder, thus preventing reflux of urine into the ureter, which might occur if the patient should be permitted to void.

ment can be easily detected by tactile sense. The McCarthy panendoscope is also an excellent instrument for such procedures. Operating cystoscopes equipped with levers, elevators or directors of any kind are not as good as the two first-mentioned instruments because the tactile sense is interfered with and unusual force may unwittingly be applied. If the ureter is large enough the extractor will slip alongside the stone and engage it on the first or second attempt. Unless it does so immediately we believe it is better to withdraw the extractor and insert two or more ureteral catheters in order to produce ureteral dilatation. These catheters are left inlying for two days, at the end of which time manipulation with the extractor will often succeed. Ureteral meatotomy is not often necessary, for the ureteral meatus can usually be readily dilated with the extractor.

In a rare case the extractor will engage the stone but it will be difficult or impossible to withdraw it immediately. In such cases it is better to leave the instrument inlying for twenty-four hours, at the end of which time it can according to our experience be easily withdrawn (fig. 6).

After ureteral stone extraction of any sort we pass at least one catheter and generally two of them into the ureter in order to detect any small fragments or a second unsuspected small stone. These can generally be teased out of the ureter by slight traction under vision. The catheters are then passed as far as the

renal pelvis and tied in along with a urethral catheter which drains the bladder. These are all left in for from forty-eight to seventy-two hours in order to obviate obstruction of the ureter by edema resulting from the manipulation. We believe this is an important point in avoiding colicky pain, fever, chills, and so on.

It is well to make a postoperative roentgenogram to prove that the stone has been removed. This should be shown to the patient and compared in his presence with the preoperative film, for it is sometimes difficult to convince the occasional patient in whose same ureter another stone forms that the original calculus was properly removed. If the roentgenograms have been kept on file, one has conclusive evidence available.

RESULTS

Of the 361 patients who underwent transurethral manipulation the entire stone was withdrawn from the ureter and presented to 246 when they awoke from the anesthetic (fig. 7). In twelve other cases the largest part of the stone was likewise withdrawn but a small fragment which passed later was visible in the postoperative roentgenogram. In 103 cases the stone was not obtained at the time of manipulation. In thirty-five of these cases the stone was passed within a few days and in twenty-eight more it was passed within a period of several weeks. During this time the great majority of patients were quite comfortable and when the stone finally passed the pain involved was as a rule less than that which was experienced prior to manipulation. Thus it is evident that the procedure dilated the ureter and assisted passage of the stone. In nine other cases it seems likely that the stone passed, as the patients thought it did but were unable to recover it for close inspection; since that time they have been free from all pain. In four cases the evidence seems to point to failure because, when last heard from, the patient stated that to his knowledge the stone had not passed. In the remaining twenty-seven cases ureterolithotomy was done after manipulation had failed, in two of these after the patient had left the Mayo Clinic.

Thus in a total of 361 cases, in 330 cases, or 91.4 per cent, the results of manipulation can be classed as successful; in four cases, or 1.1 per cent, the method was a complete failure, and in twenty-seven cases, or 7.5 per cent, ureterolithotomy, elective or otherwise, was performed following attempted manipulation. The first attempt to obtain the stone was successful in a high percentage of the cases. In the entire series of 361 cases a total of 416 attempts were made or an average of 1.26 manipulations for each of the 330 successful cases.

It is of course a great satisfaction to the patient to be given the stone when he awakes from the anesthetic, but trying to attain the end should not inveigle the urologist into harsh manipulative efforts. A better course if the extraction proves difficult is to depend on the dilatation produced and allow the patient a reasonable interval, as long as he is comfortable, in which to try to pass the stone.

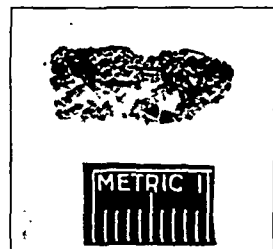


Fig. 7.—A calculus which was removed at the time of manipulation.

REACTION TO MANIPULATION

Pain will almost never be experienced if, as stated in a preceding section, catheters are left inlying in the

ureter after manipulation. Following their removal, or even before in rare cases, fever may develop. Only rarely (2.7 per cent of the 361 cases) does this become alarming, causing one to wonder whether infection has developed in the renal pelvis or renal cortex.

These patients must be carefully nursed and sometimes it is wise to reinsert ureteral catheters. In several cases such as this, from 50 to 75 mg. of mercuriochrome diluted in 500 cc. of physiologic solution of sodium chloride given intravenously proved remarkably beneficial. Reactions to manipulation classed as moderate to mild occurred in thirty-two cases, or 8.8 per cent. In none of these did the fever reach a degree which caused much concern and in most instances the temperature returned to normal in a day or two. In the remaining cases, or 88.5 per cent, there was no reaction whatever after the manipulation of the stone except possibly a little burning on urination and a slight frequency for a few days.

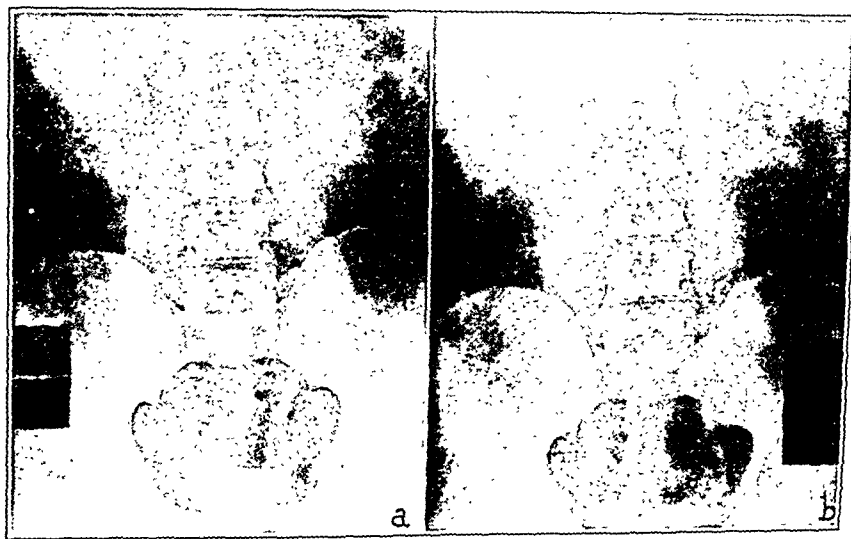


Fig. 8.—*a*, Preoperative excretory urogram showing failure of the left kidney to excrete the urographic mediums; note the calculus at the left ureterovesical junction; *b*, postoperative excretory urogram made only a few hours after transurethral manipulation, revealing a normal-appearing left kidney, there being no dilatation of the renal pelvis or calices and only slight dilatation of the ureter.

We believe that the use of catheters inlying in the ureter and then proper care are most important in avoiding febrile reaction. Strictly aseptic precautions should be instituted. If possible, irrigation of the catheters should be avoided, being used only when the catheters plug and cannot be opened again by ordinary aspiration with a syringe. A good method of keeping the free ends of the ureteral catheters sterile is to pass them through the holes in the nipple of an infant's nursing bottle; the bottle is small enough so that it will be necessary, if the bed is to be kept dry, to inspect it every hour or two, thus insuring the patient good attention by the hospital staff.

Severe complications such as periureteritis, thrombophlebitis, pulmonary infarcts and pyelonephritis of more than a few days' duration were exceptionally rare, being confined to but a few patients who weathered the storm after appropriate treatment was instituted.

PERIOD OF HOSPITALIZATION

Of great importance to the patient is the hospital cost involved in getting rid of the offending ureteral calculus. In those instances in which the initial attempt at extraction has failed and additional transurethral manipulation is advised the time consumed will soon be required for convalescence

from a ureterolithotomy. The anticipated disappointment of the patient over the failure to remove the stone should not influence the cystoscopist to the point of persisting with efforts at removal which might result in ureteral injury. Extreme gentleness in the insertion of extractors is essential if complications are to be avoided. The patient should be told at the outset that open surgical operation may be necessary after manipulation has been attempted. Unless he consents to this it is probably better to let him try to pass the stone without cystoscopic aid. Generally after a few colics he will be willing to cooperate.

The large majority of our patients spent only a few days in the hospital. It is generally our practice to keep the catheters which were passed into the ureter after manipulation in place for forty-eight hours and following their removal we believe it is best to observe the patient closely for another twenty-four hours or even forty-eight hours. To some urologists this may

seem overcautious. In our experience, however, the patient appreciates the precaution and willingly spends the time in the hospital. In 75 per cent of the cases the interval of hospitalization was not more than one week and in most of these it was four days or less. In another 20 per cent up to an additional week of hospitalization was required and the other 5 per cent were unfortunate enough to be in the hospital longer than two weeks. One patient who required abdominal incision to drain a periureteritis spent four weeks in the hospital. The longest duration of confinement was that of one elderly patient in whom thrombophlebitis and recurring pulmonary infarcts developed; a total of sixty-three days' hospitalization was required in this case. The manipulation in this case was quite simple and we believe the complication

which occurred cannot be attributed to any fault in the method.

RETURN OF RENAL FUNCTION

We believe attention should again be called to the fact that renal function is often temporarily much reduced in cases of ureteral calculus in which the stone is tightly impacted. At the time of acute colic and for an interval thereafter an excretory urogram will entirely fail to delineate the renal pelvis and calices. The erroneous conclusion might be drawn that the kidney is entirely functionless and that nephrectomy is therefore the procedure of choice. Practically all urologists have encountered such cases and are aware that following cystoscopic or open surgical removal of the impacted calculus renal function is quickly resumed and in many cases there is practically no evidence of hydronephrosis (fig. 8). The kidney in such cases must temporarily stop its physiologic activity. It should be emphasized that the excretory urogram is only one link in the chain of evidence in any urologic disorder; particularly is this true in ureteral calculous disease and operative treatment should not be instituted until a competent urologist has reviewed the excretory urogram. Unless this practice is adhered to, many kidneys will be unnecessarily sacrificed.

Shortly after the passage of a ureteral calculus, renal function is often such that an excretory urogram will be outlined on the involved side in only those films made from thirty to forty-five minutes after intravenous injection of the mediums. The calices may be dilated to several times normal size but after a few weeks another urogram will usually disclose normal size calices which are visualized in a normal interval after injection of the mediums. Here too the available data must be carefully considered. The finding of a low-grade fever in such a case coupled with the early urographic evidence might be construed as sufficient indication for nephrectomy, when as a matter of fact such a kidney will invariably recover.

MORTALITY

In this series of 361 cases in which transurethral manipulation was done there were no deaths which could be directly attributed to the methods employed. The only death which occurred was that in one case in which transurethral methods were unsuccessful and ureterolithotomy was done immediately. This patient seemed, during the second week of convalescence, well on the way to recovery when a massive pulmonary embolism occurred and she died within a few minutes.

CONCLUSIONS

1. Ureteral calculi will pass spontaneously in about one third of the total number of cases encountered; in approximately the same number transurethral methods of extraction are justified and advisable; for the other third ureterolithotomy or other open surgical methods seem best.

2. Ureteral stone extractors, if carefully used, will be of distinct aid in removing the stone at the time of manipulation.

3. If the case is suitable for the use of a metallic stone extractor, this instrument will readily enter the ureter and quickly engage the stone. Repeated attempts to engage the stone should be avoided, for they will usually result in ureteral trauma and lead to complications.

4. The morbidity following proper transurethral methods is slight and mortality is extremely low.

5. In the large majority of cases the opinion of a urologist should be obtained before a decision is made as to the course of treatment which should be instituted for a patient with ureteral calculus.

ABSTRACT OF DISCUSSION

DR. E. P. ALYEA, Durham, N. C.: Cystoscopic removal of ureteral calculi has always been a subject of great interest to urologists. Many instruments have been invented and various technics described, all of them based on the principles of dilation, lubrication or relaxation of the ureter or on the dislocation, grasping or crushing of the stone. I feel that overemphasis has been placed on the invention of special instruments for the extraction of ureteral calculi and that perhaps the simplest, safest and most efficient methods have been overlooked. I am of the opinion that the multiple catheter method is both efficient and safe. This includes the principles of dilation, lubrication of the ureter and the grasping of the stone in the mesh of twisted catheters. To this technic I added the idea of continuous constant traction on the engaged calculus followed by relaxation of the ureter by spinal anesthesia at the time of extraction. Once the stone is caught, constant traction is obtained by means of rubber bands taped to the twisted catheters and attached to a perineal traction cage. Olive oil is injected through the catheters several times and, if the stone has not come out in twelve to twenty-four hours, spinal anesthesia is administered and the catheters are withdrawn. Many of the larger stones have been extracted in this

manner. An objection often raised to cystoscopic removal is that the calculus remaining in the lower part of the ureter for some time causes irreparable damage to the kidney. There have been many cases in our clinic to disprove this contention. In a series of 400 ureteral stones in our clinic, 71 per cent were removed cystoscopically and the mortality was 0 in these 296 cases. We have used the various ureteral scissors, fulguration fins and so on for cutting the ureteral meatus. The Collings knife used through a panendoscope probably is the most satisfactory. It is introduced and turned so that the blade points anteriorly. After the intravesical ureter has been elevated with the blade, the surgical cutting current is touched and the knife cuts through quickly. One is sure not to cut too deeply with this method. It is remarkable how a meatotomy may start stones moving even though they may be 2 or 3 cm. from this area. I have seen this occur many times.

DR. H. C. BUMPUS JR., Pasadena, Calif.: The question of what method shall be used in the treatment of calculi in the ureter has much in common with the question of what method shall be employed in treating benign prostatic hypertrophy. In both conditions the urologist's judgment is often, shall it be said, unduly influenced by the desire of the patient to avoid a major surgical procedure. I doubt that this state of affairs ever occurs more frequently than in the treatment of stones in the ureter. The patient visualizes the rapid and successful removal of his stone by manipulation, while the urologist remembers the numerous failures associated with such procedures; through his mind flash the serious and not infrequent fatal complications that can so rapidly occur, many examples of which were reported by Drs. Rusche and Bacon earlier in this meeting. It is imperative, therefore, to acquaint the patient with the possibilities of serious complications occurring as a result of manipulative procedures and obtain his consent for immediate major surgical intervention, should they occur. Such complications result from three causes. First and most important is urinary obstruction, second ureteral trauma with its associated periurethritis, and third and least frequent perforation. The possibility of any one of these three complications occurring is minimized, as Dr. Alyea had emphasized, by avoiding the use of steel instruments and employing only catheters for manipulative procedures. These insure the continued passage of urine by an obstruction, should any occur. They produce the least amount of trauma, and it is difficult if not impossible to produce ureteral perforation with them. They have still the added advantage of being able to be removed singly, if the manipulator is unsuccessful, while in the case of the mechanical instruments, if a stone gets caught crosswise, neither the instrument nor the stone can be recovered without resorting to some major surgical procedure.

DR. F. E. B. FOLEY, St. Paul: My ideas about the management of ureteral stone and particularly expectancy and manipulation versus open operation have been influenced by a particular technic for lumbar ureterotomy that I devised and first reported before this section at the 1934 meeting. Supported by further experience I wish to point out again the important bearing it may have on the decision between manipulation and open operation. The decision between expectancy and manipulation or open operation in the case of a stone in the lumbar ureter is an entirely different problem from the same decision in the case of a stone in the pelvic ureter. Pelvic ureterotomy is always a more or less formidable procedure beset by the usual hazards of major surgery. Accordingly, when the stone is in the pelvic ureter major operation of this sort usually should be avoided in favor of expectancy and manipulation. This is not the case when the stone is in the lumbar ureter. The usual form of lumbar ureterotomy is also a distinctly major operation but it can and should be an almost minor one. When the choice is between this improved form of lumbar ureterotomy or expectancy and manipulation there is, in most cases, very little to recommend the latter. The choice between expectancy and manipulation or open operation should be dictated by only one thing—welfare of the patient. To attain this one must consider mortality, morbidity (irreparable pathologic change), period of disability and discomfort to be endured. In respect of all these, when the stone is first discovered in the lumbar ureter advantage lies entirely with

this new and improved form of lumbar ureterotomy and not with expectancy and manipulation. When a stone of anything of truly minute size is first discovered in the lumbar ureter the patient's welfare will be served best by its immediate removal by this method of open operation. In such cases it is no trouble to start expectancy and manipulation, but how much trouble will ensue before success or failure results is another question. The patient will be obliged to endure at least a few attacks of colic. One or two or even three or four cystoscopic manipulations may be necessary and are a real hardship. In the report of Drs. Thompson and Kibler it is notable that most of the stones shown in the lumbar segment of the ureter were removed by open operation. This is a sensible retreat from the radical conservatism of expectancy and manipulation that prevailed until recently.

DR. VINCENT J. O'CONOR, Chicago: I wish to add, apropos of Dr. Foley's discussion, an unfortunate experience which he has not mentioned but which has occurred in our experience on fourteen occasions in some sixty operations, recently reviewed, for lumbar ureterotomy through a high anterior incision. First of all, I would like to agree that under favorable circumstances this is the most satisfactory of all urologic operative procedures. It is without shock, recovery is rapid and no damage is done in the removal of the stone. But the success of the procedure depends on the fact that the stone remains in that portion of the upper ureter which it occupied before the incision was made. Some 20 per cent of these upper ureteral calculi will ascend to the upper ureter or renal pelvis after the patient has been anesthetized, especially under spinal anesthesia, and the use of any degree of the Trendelenburg position. This same change of position has occurred no matter what position the patient has assumed on the operating table. In discussing this method, which he describes as so simple, one should bear this fact in mind.

THE REACTION OF PERIPHERAL BLOOD AND BONE MARROW

IN CHRONIC HEMORRHAGE AND IN ESSENTIAL THROMBOPENIC PURPURA

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The circulating cellular elements in the peripheral blood are dependent largely on a normal maturation process in the bone marrow. If this is disturbed, disease results. Thus granulocytopenia is associated with a maturation arrest of the myeloid tissue and pernicious anemia with a disturbance in the maturation process of the erythroid tissue.

It has been noted in essential thrombopenic purpura that there is a hyperplasia of the megakaryocytic tissue which is associated with a reduction in the number of platelets in the peripheral blood and with abnormalities in platelet size. This has led to two interpretations of the mechanism of the disease. By some the primary defect is attributed to a failure in the maturation of the megakaryocyte.¹ The cell does not reach sufficient maturity to form platelets. By others the hyperplasia is attributed to a compensatory response to excessive destruction of platelets in the peripheral blood.² In essential thrombopenic purpura there is also a varying

degree of blood loss which is dependent on the severity of the disease. The megakaryocytic hyperplasia has also been attributed to this factor.³ It seemed therefore important to study the bone marrow and peripheral blood in cases of chronic bleeding as well as in cases of essential thrombopenic purpura with the hope that evidence could be obtained which would explain the mechanism of the bone marrow response in essential thrombopenic purpura.

MATERIAL AND METHODS

This study comprised: Five normal men and five normal women. Six patients with thrombopenic purpura, in five of whom the spleen was removed, and two chronic cases, one essential and the other supposedly secondary in type. Three patients with symptomatic purpura primarily due to a toxic capillary disease. Five patients with chronic hemorrhage, the condition of two being due to duodenal ulcers, of one to hemorrhoids and of two to profuse and abnormally long menstrual periods; these are studied before and after the cause of bleeding was corrected and after iron therapy was instituted. Three blood donors who had given from 500 to 800 cc. of blood; these subjects of acute hemorrhage were studied at one, four, eight and from forty-eight to seventy-two hours following the removal of blood.

We have described in detail elsewhere a method of obtaining, preparing and studying bone marrow cells and its evaluation, from a clinical point of view.⁴

Complete hematologic studies and tests were made on all patients at frequent intervals. These included hemoglobin determination, red and white counts, platelet studies (the direct method and the indirect blood smear method), reticulocyte counts, differentials, sedimentation rate, and the Wintrobe indexes⁵ as well as the bleeding, coagulation and clot retraction time. The capillary resistance or tourniquet test was done by means of a cuff and blood pressure apparatus.

The bone marrow in the active cases of essential thrombopenic purpura was studied before and after blood transfusions were given at frequent intervals following splenectomy. In the chronic cases of thrombopenic purpura and symptomatic purpura, sternal marrow aspirations were performed during the active phase and after the purpuric reaction disappeared. The splenectomies were performed by Dr. Warren H. Cole.

MATURATION OF MEGAKARYOCYTES

Wright's⁶ original finding that the megakaryocytes are the only source of true platelets has been repeatedly confirmed both clinically and experimentally by many investigators.⁷ The origin, formation and morphologic description of the megakaryocytes in human adult bone marrow under normal and pathologic conditions has been reserved for subsequent report. For clarity we will categorically outline the stages in the development of the megakaryocyte. The earliest type of megakaryocyte (promegakaryocytes) has a number of morphologic characteristics similar to those of the myeloblast. Through a series of changes first in the nucleus and later in the cytoplasm the multilobulated adult mega-

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2. Kazzelson, R.: Verschwinden der hämorrhagischen Diathese bei einem Falle von "Essentielle Thrombopenie" (Frank) nach Milzextirpation, Wien. klin. Wchnschr. 29: 1451, 1916.

3. Jaffé, R. H.: The Bone Marrow, J. A. M. A. 107: 124 (July 11) 1936.

4. Schleicher, E. M., and Sharp, E. A.: Rapid Methods for Preparing and Staining Bone Marrow, J. Lab. & Clin. Med. 22: 949 (June) 1937.

Limarzi, L. R.: The Diagnostic Value of Sternal Marrow Aspirations, Illinois M. J. 75: 38 (Jan.) 1939.

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karyocyte is formed. These cells are formed occasionally by a series of complicated mitotic divisions of the nucleus without cell division. Rarely, fusion of reticular or so-called histoid cells may form a polykaryocyte. In the megakaryocyte the best criteria of maturity are the amount, character and arrangement of azurophilic granules in the cytoplasm. The number of lobes or nuclear configuration is of little value in this respect. In our differential counts we have designated three

RESULTS AND ANALYSIS

Normal Individuals.—The five men and five women, who in some cases had more than one sternal marrow examination, showed a myeloid-erythroid volume which averaged 5.5 per cent. The megakaryocytes, which are scattered throughout the field, averaged 52.2 to the 18 mm. square area or 58.8 when corrected for 1,000,000 nucleated bone marrow cells. The differential megakaryocyte count revealed 48 per cent adult type with

TABLE 1.—Conditions Found in the Peripheral Blood and Bone Marrow in Cases of Essential Thrombopenic Purpura Before and After Splenectomy

Case	Initials	Sex	Age, Yrs.	Date	Cases of Essential Thrombopenic Purpura	Peripheral Blood			Bone Marrow					
						Mean Corpuscular Volume, Cubic Microns	Mean Corpuscular Hemoglobin Concentration, %	Platelets (Thousands)	Megakaryocytes per 18 Mm. Square	Megakaryocytes per Million Nucleated Bone Marrow Cells	Myeloid-erythroid, %	Megakaryocytes, Differential Count, per Cent		
1	E. M.	♂	17	9/16/37	Before splenectomy	81	31	12.0	661.0	356.8	6.5	55.0	21.0	24.0
				3/16/38	After splenectomy	81	33	205.0	38.0	30.9	5.0	20.0	50.0	20.0
2	D. T.	♀	14	3/25/38	Before splenectomy	87	28	48.0	240.0	380.9	12.0	39.0	48.0	13.0
				8/ 2/38	After splenectomy	85	31	326.0	210.0	105.5	8.5	35.0	48.0	17.0
3	R. V.	♀	23	6/24/38	Before splenectomy	94	28	18.0	1,860.0	1,376.1	41.0	50.0	26.0	24.0
				7/22/38	After splenectomy	91	27	402.0	630.0	702.6	16.0	37.0	45.0	17.0
4	F. R.	♀	21	12/5/38	Before splenectomy	81	31	160.0	1,951.0	1,088.0	24.0	28.0	49.0	23.0
				1/3/39	After splenectomy	82	35	380.0	335.0	33.0	10.0	7.0	65.0	28.0
5	R. F.	♂	16	11/9/37	Spleen not removed	83	36	0-39.0	168.0	136.7	6.5	50.0	25.0	25.0
Normal individuals (10).....						88	33	200.0	52.2	58.8	5.5	24.0	48.0	28.0
								350.0						

TABLE 2.—Conditions Found in the Peripheral Blood and Bone Marrow in Cases of Chronic Hemorrhagic Anemia

Case	Peripheral Blood			Bone Marrow					
	Mean Corpuscular Volume, Cubic Microns	Mean Corpuscular Hemoglobin Concentration, per Cent	Blood Platelets, Thousands	Myeloid- erythroid Volume, per Cent	Megakaryo- cytes per 18 Mm. Square	Megakaryocytes per Million Nucleated Bone Marrow Cells	Megakaryocytes, Differential Count, per Cent		
							Young	Adult	Degenerated
1	61.0	22.0	Increased	21.0	1,635.0	1,277.0	55.0	23.0	22.0
2	50.0	26.0	Normal	10.0	159.0	113.0	25.0	54.0	21.0
3	77.0	25.0	Normal	9.0	120.0	81.0	26.0	45.0	19.0
4	75.0	27.0	Normal	10.0	459.0	306.0	11.0	66.0	23.0
5	59.0	28.0	Increased	9.0	420.0	336.0	24.0	54.0	22.0
Normals (10 cases)	88.0	33.0	200-350	5.5	52.2	58.8	24.0	48.0	28.0

TABLE 4.—Summary of the Conditions Found in Peripheral Blood and Bone Marrow in All the Cases Studied

Diseases	No. of Cases Studied	Peripheral Blood			Bone Marrow					
		Mean Corpuscular Volume, Cubic Microns	Mean Corpuscular Hemoglobin Concentration, per Cent	Platelets, Thousands	Megakaryocytes per 18 Mm. Square	Megakaryocytes per Million Nucleated Bone Marrow Cells	Myeloid-erythroid, %	Megakaryocytes, Differential Count, per Cent		
Normal individuals.....	10	88.0	33.0	200.0-350.0	52.2	58.8	5.5	24.0	48.0	28.0
Essential thrombopenic purpura.....	5	85.0	31.0	0-160.0	977.0	707.0	18.0	44.4	33.8	21.8
Chronic essential thrombopenic purpura.....	1	94.0	32.0	110.0	1,713.0	1,487.0	7.0	52.0	24.0	24.0
Chronic thrombopenic purpura, secondary.....	1	94.0	34.0	12.0- 67.0	12.0	10.0	30.0	34.0	33.0	33.0
Thrombopenic purpura with hemorrhagic episodes.....	1	97.0	37.0	224.0	24.0	426.2	8.0	24.0	41.0	35.0
Symptomatic purpura.....	3	82.0	31.0	Normal	177.5	156.6	11.0	31.5	42.0	26.5
Chronic hemorrhagic anemia.....	5	64.0	26.0	Normal, increased	559.0	423.0	11.8	31.0	48.0	21.0
Acute loss of blood.....	3	82.0	35.0	Normal, increased	215.0	140.0	12.0	11.0	75.0	14.0

types of cells, "young, adult and degenerated." Under young forms are included the promegakaryocytes seen chiefly in essential thrombopenic purpura and the intermediate forms seen usually in chronic hemorrhage. The formation of platelets occurs by a process of budding or by detachment of portions of the cytoplasm of the megakaryocytes in the bone marrow. It may also occur by cytolysis of the cytoplasm of these cells. The latter process is seen more frequently in aspirated human bone marrow.

24 per cent young and 28 per cent degenerated forms. The peripheral blood showed an average normal cell size of 88 cubic microns with a mean corpuscular hemoglobin concentration of 33 per cent. The blood platelets ranged from 200,000 to 350,000. These were mostly uniformly small. *Essential Thrombopenic Purpura (Active Phase).*—Four of the five patients were first seen and examined during the active phase of the disease. They presented spontaneous bleeding into the skin or following the

application of a tourniquet to the arm in order to obtain blood from a vein. Petechiae were scattered over the arms, abdomen and legs. Bleeding occurred from the nose and gums and in some cases from the bowel, kidney and vagina. In the females there were disturbances in the menstrual cycle. The bleeding time was



Fig. 1.—1. Normal bone marrow: A, adult megakaryocyte. 2. Essential thrombopenic purpura (case 3): A, multipolar mitosis of a megakaryocyte; B, adult megakaryocyte.

The bone marrow hyperplasia gradually, but not uniformly, returns to normal both quantitatively and qualitatively. The hyperplasia of the megakaryocytic tissue persists long after the myeloid and erythroid increase has returned to normal. The changes that take place in the degenerated types of megakaryocytes are of interest.

Prior to splenectomy, many of the cells classified as degenerated forms show a normal nucleus, a hyaline cytoplasm and an absence of azurophilic granules. They produce cytoplasmic buds or so-called pseudoplatelets. This type of megakaryocyte disappeared following splenectomy.

In case 3 the thrombopenic purpura was complicated by hyperthyroidism. Following splenectomy the symptoms and signs due to the former process disappeared but the thyroid disease persisted. This was relieved by thyroidectomy at a later date. The bone marrow showed a hyperplasia and an abnormality of the megakaryocytic tissue. Mitosis of the megakaryocytes, which was never seen in normal bone marrow and only rarely in the bone marrow of patients with hyperthyroidism, was a frequent finding. Jones⁸ has shown that in hyperthyroidism there is a myeloid-erythroid hyperplasia with an increase in the number of megakaryocytes. This gradually returns to normal following thyroidectomy. Most of the megakaryocytes are adult types and



Fig. 2.—1. Young megakaryocytes: A, promegakaryocytes; B, intermediate type. 2. Adult megakaryocyte.

prolonged; the coagulation was normal with a poor or absent clot retraction. The blood platelets were absent or markedly reduced in number. The tourniquet test was strongly positive during this active stage in all the cases. The peripheral blood showed a normocytic anemia. The red cell size ranged from 81 to 96 cubic microns and the mean corpuscular hemoglobin concentration varied between 28 and 36 per cent. The blood platelets, besides being low, showed marked variations in size. This abnormality was a constant finding. The bone marrow was characterized by a myeloid-erythroid-megakaryocytic hyperplasia ranging from 6.5 to 41.0 per cent, compared with an average of 5.5 per cent seen in the normal controls. The number of megakaryocytes was greatly increased in all the cases. They ranged from 136 to 1,376 per million nucleated bone marrow cells, compared with a normal average of 58.0. Young forms, mostly promegakaryocytes, varied from 39 to 55 per cent of the differential count. This is high when compared with the average of 24 per cent, mostly intermediate forms, present in the normal individuals.

The megakaryocytic hyperplasia has persisted through temporary remissions induced by blood transfusions even though the peripheral blood showed a moderate increase in the number of platelets.

Following splenectomy there is a cessation of bleeding with a gradual increase in the number of blood platelets. The platelets are changed to a more normal appearance.

mitosis of these elements is rarely observed. This is further evidence that essential thrombopenic purpura is primarily a disease of the megakaryocytes.

Chronic Thrombopenic Purpura.—The megakaryocytic hyperplasia exceeds that seen in the acute cases (table 4). Fifty-two per cent of the megakaryocytes

⁸ Jones, R. M.: Human Sternal Marrow in Hyperthyroid and Myxedematous States, *Proc. Soc. Exper. Biol. & Med.*, to be published.

in the differential smear were young forms (promegakaryocytes). The myeloid-erythroid volume was only slightly increased. A woman aged 45 gave a history of spontaneous bleeding into the skin or ready bruising for the past four years. The platelet counts taken during several of these periods never dropped lower than 90,000. The tourniquet test was positive. The bleeding time only slightly increased, with a normal coagulation time and a poor clot retraction. Except for the platelet reduction, the peripheral blood studies were quite normal.

Thrombopenic Purpura with Hemorrhagic Episodes.—A woman aged 28 had thrombopenic purpura for the past sixteen years in a chronic form with relapses and remissions during which insignificant spontaneous bleeding occurred. Bleeding into the skin in the form of petechiae and from the kidney was present during the active phase of the disease. The blood platelets dropped as low as 50,000 during a relapse. No bone marrow studies were done prior to splenectomy. Following the removal of the spleen the platelets reached a level of 224,000. The bleeding episodes were reduced but not abolished. The bone marrow showed a myeloid-erythroid-megakaryocytic hyperplasia with most of the young forms of a promegakaryocytic type (table 4). Complete recovery from the disease is not to be expected in this case, since the bone marrow has not as yet returned to normal following splenectomy.

Symptomatic Purpura.—In the three cases the purpura was primarily due to capillary disease. The blood platelets were normal in number and in character. The megakaryocytes in the bone marrow were increased in number but they never reached the level seen in acute or chronic essential thrombopenic purpura (table 4). The differential megakaryocytic count was normal. The bleeding, coagulation time and retraction of the clot were normal. The tourniquet test was positive. The toxic factor in these two cases accounted for the increased myeloid-erythroid volume, which was reflected in the peripheral blood by a polymorphonuclear leukocytosis and toxic changes in the granulocytes. The anemia was normocytic in type.

Chronic Hemorrhage.—The bone marrow hyperplasia is reflected in the peripheral blood by a microcytic hypochromic red blood cell. The blood platelets are normal or increased in number and mostly small type. In some cases, especially if a complication is present, most of the megakaryocytes are intermediate forms between the young (promegakaryocyte) and the adult type. The platelets are numerous in the aspirated bone marrow material and they exceed in number the blood platelets taken from the buffy layer (leukocytes and platelets) in the hematocrit tube used for the determination of the packed red blood cells in the peripheral blood. Thus in chronic hemorrhage an intermediate type of megakaryocyte is capable of producing platelets which are morphologically and physiologically normal. This emphasizes again the finding that cytoplasm of these platelet forming cells is a better criterion of maturity than is the nucleus. Although the cell is not as large and its nucleus not so complicated as the adult type of megakaryocyte, apparently the cytoplasm contains its full quota of azurophilic granules. These cells are illustrated in figure 2.

Acute Loss of Blood.—Three normal healthy young persons, two men and one woman, were studied one hour, twenty-four hours and two days after the donation of 500 cc. of blood. The peripheral blood showed

a slight leukocytosis and a small increase in the number of normal platelets. The bone marrow revealed a myeloid-erythroid-megakaryocytic hyperplasia. This occurred between twenty-four and forty-eight hours after the removal of the blood. In table 4 one such case is illustrated. The adult megakaryocytes are definitely increased in number.

COMMENT

The cause of essential thrombopenic purpura is not entirely clear. Much clinical and experimental work has been done and many theories have been advanced. Rosenthal⁹ and others¹⁰ have written comprehensively on the subject. Therefore only a few of the important and recent investigators will be touched on in this paper. Werlhof's¹¹ name has been attached to this dis-

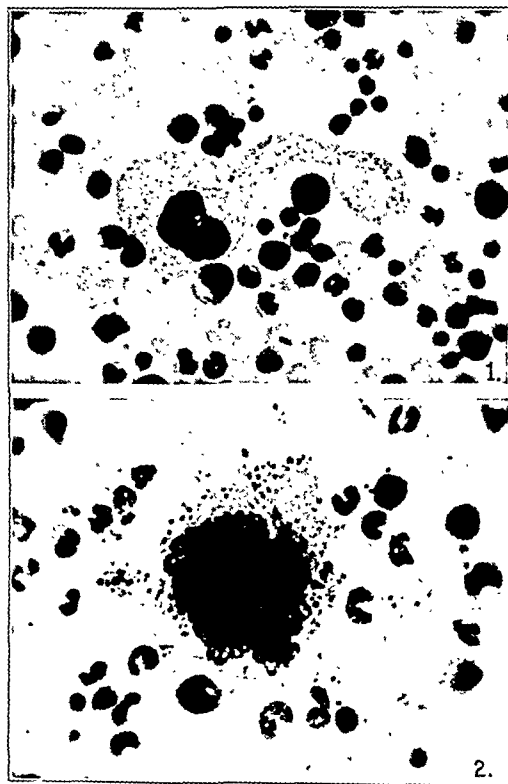


Fig. 3.—1. Adult megakaryocyte with large pseudopodia. 2. Megakaryocyte showing platelet formation.

case since his report of a case in 1775. Hayem¹² called attention to the lack of changes in the erythrocytes, the reduction in number and the abnormalities in the platelets, the occasional leukocytosis without any apparent inflammatory condition, the normal coagulation and the lack of clot retraction. He believed that the platelet reduction was either the result of destruction or a defect in their production. Frank¹³ was of the opinion that the

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10. Wintrobe, M. M.; Hanrahan, E. M., Jr., and Thomas, C. B.: Purpura Haemorrhagica with Special Reference to Course and Treatment, J. A. M. A. 109: 1170 (Oct. 9) 1937. Giffin, H. Z.: Essential Thrombocytopenic Purpura, Internat. Clin. 46: 95 (Dec.) 1936. Jones, O. P.: Cytology of Pathologic Marrow Cells with Special Reference to Bone Marrow Biopsies, in Downey's Handbook of Haematology, vol. 3, New York, Paul B. Hoeber, Inc., 1938.

11. Werlhof, P. G.: Opera Medica, Hannoverae imp. fratrum Helwingiorum 2: 615, 1775-1776.

12. Hayem, G.: Leçons sur les maladies du sang, Paris, Masson & Cie, 1900.

13. Frank, E.: Aleukia Splenica (-plenogene Leuko-Myelotomikose), Berl. klin. Wchnschr. 53: 555 (May) 1916.

reduction in the number of circulating blood platelets and the morphologic changes of the megakaryocytes in the bone marrow were due to some noxa probably having its origin in the spleen. Minot¹⁴ believes that the causative agent acts on the blood platelets, on the megakaryocytes or on the bone marrow as a whole. Kaznelson, who first removed the spleen in a case of

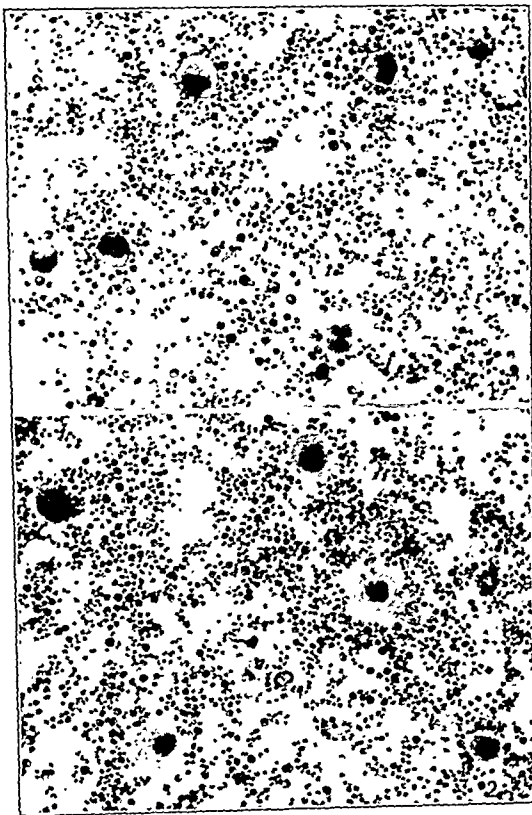


Fig. 4.—Essential thrombopenic purpura bone marrows: 1. Promegakaryocyte type. 2. Adult megakaryocytic type.

essential thrombopenic purpura, believed that the thrombocyte reduction in the peripheral blood was brought about by an increased thrombolytic activity of the spleen. The increase in the number of megakaryocytes in the bone marrow in his opinion was compensatory hyperplasia. Brill and Rosenthal¹⁵ stated that the disease was associated with a disturbance in function of the capillary wall in addition to a disorder of the blood platelets. The changes in the capillary wall, they thought, were probably due to a reduction in the number of blood platelets. Other investigators¹⁶ called attention to what they believed were morphologic changes in the granules in the cytoplasm and alterations in the nucleus of the megakaryocytes in the bone marrow. Naegeli¹⁷ stated that a disease of the bone marrow was in the foreground.

The function of the spleen in its relation to essential thrombopenic purpura is not definitely understood. It is usually regarded as the graveyard of both red

blood cells and thrombocytes. On the other hand the depression of the megakaryocytes in the bone marrow was believed by Frank¹⁸ to be due to some inhibitory splenic influence directed against the reticulo-endothelial system from which the platelet forming cells and granulocytes have their origin. Recently Troland and Lee¹⁹ have been able to decrease to a low level the blood platelets of normal rabbits by the intravenous injections of acetone extracts of a splenic tissue taken from patients operated on for essential thrombopenic purpura. Torrioli and Puddu,²⁰ in a series of experiments using splenic extracts from patients with Werlhof's disease, in a culture medium were able to show that the principle acting on the megakaryocytes at high doses injures them and at reduced doses stimulates them. They stated that this substance elaborated by the principal reticulo-endothelial centers seems to be likely to return to normality by means of splenectomy.

The bone marrow in this disease in the five cases we have studied contained an increased number of megakaryocytes. It will be noted in table 4 that the average number of these cells for all cases of thrombopenic purpura exceeds those seen in various other clinical conditions associated with an increased number of megakaryocytes in the bone marrow. This is also true for



Fig. 5.—1. Degenerated megakaryocyte; normal bone marrow. 2. Degenerated megakaryocyte in which the cytoplasm is pulling away from the nucleus; normal marrow.

the number of young forms of these cells in the differential count of the megakaryocytes. In case 5 (table 1) the number of adult megakaryocytes was normal in the

14. Minot, G. R.: Diminished Blood Platelets and Marrow Insufficiency: A Classification and Differential Diagnosis of Purpura Haemorrhagica, Aplastic Anemia and Allied Conditions, *Arch. Int. Med.* 19:1062 (June) 1917.

15. Brill, N. E., and Rosenthal, Nathan: The Curative Treatment by Splenectomy of Chronic Thrombocytopenic Purpura, *Am. J. M. Sc.* 166:503 (Oct.) 1923.

16. Seeliger, S.: Ueber Organbefunde und ihre Bedeutung für die Pathogenese bei essentieller Thrombopenie und Aleukie, *Klin. Wchnschr.* 3:731 (April 22) 1924.

17. Naegeli, Otto: *Blutkrankheiten und Blutdiagnostic*, ed. 5, Berlin, Julius Springer, 1931.

18. Frank, E.: *Die haemorrhagischen Diathesen*, in Schittenhelm's *Handbuch der Krankheiten des Blutes und der blutbildenden Organe*, Berlin, Julius Springer, 1925.

19. Troland, C. E., and Lee, F. C.: Thrombocytopen: A Substance in the Extract from the Spleen of Patients with Idiopathic Thrombocytopenic Purpura That Reduces the Number of Blood Platelets, *J. A. M. A.* 111:221 (July 16) 1938.

20. Torrioli, Mario, and Puddu, Vittorio: Recent Studies on the Pathogenesis of Werlhof's Disease, *J. A. M. A.* 111:1455 (Oct. 15) 1933.

differential smear in the presence of a myeloid-erythroid hyperplasia. Thus when the process is acute the megakaryocytic hyperplasia is usually promegakaryocyte in character; when less acute it may be adult in type. In either instance the platelets in the bone marrow (concentration method) are as scarce as they are in the peripheral blood. This suggests a maturation arrest of

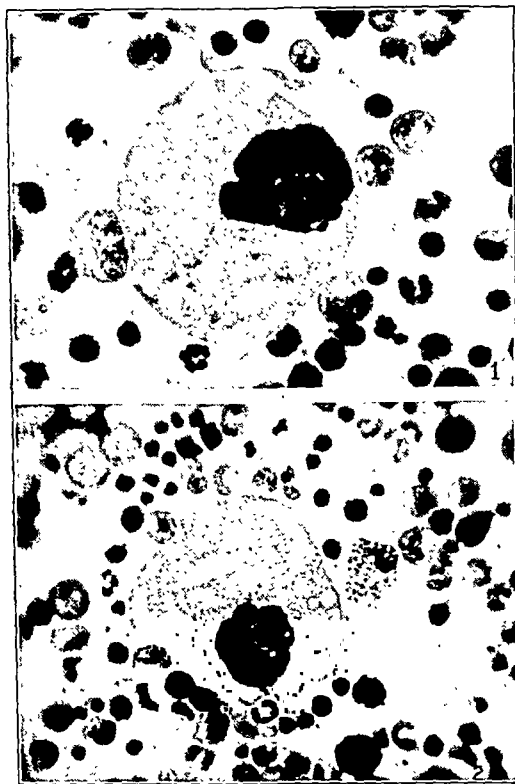


Fig. 6.—1. Cytolysis of the cytoplasm in a normal adult megakaryocyte. 2. A hyaline megakaryocyte with azure-free cytoplasm from a case of essential thrombopenic purpura.

the megakaryocytic tissue and thus speaks for a lack of platelet formation rather than an increased destruction of these elements. None of our spleens showed any signs of retained platelets. This finding in the spleen has been noted by other investigators.²¹

Nickerson and Sunderland,²² using postmortem section material, stated that the differential cell counts showed no fundamental difference in the bone marrow in cases of idiopathic thrombopenic purpura haemorrhagica, various other forms of purpura haemorrhagica and normal controls. Other investigators²³ have called attention to a normal or increased number of megakaryocytes in the sternal marrow in this disease. Lawrence and Knutti²⁴ studied the bone marrow (biopsies) in patients with idiopathic thrombopenic purpura prior to removal of the spleen. They described

two types of marrow in this disease. One type showed a normal and the other type abnormal morphologic changes as regards the megakaryocytes. They raised the question as to the probable value of bone marrow studies with regard to determining the prognosis of splenectomy in cases of chronic thrombopenic purpura, the first type probably giving good results following splenectomy and the operation being of little value in the second type of abnormal megakaryocyte marrow. Our work has shown that this prediction has not been borne out. Both types respond to splenectomy.

When the reaction following bleeding does increase the number of megakaryocytes in the bone marrow they are of the intermediate type and not the promegakaryocyte type seen in essential thrombocytopenic purpura. It should be further noted that in chronic essential thrombocytopenic purpura (table 4) in which hemorrhage has not occurred there is still a marked promegakaryocytic hyperplasia.

The failures following splenectomy in some cases diagnosed essential thrombopenic purpura have not been satisfactorily explained. Accessory spleens have been advanced as the cause of failure in some cases.²⁵ That the spleen is only part of the reticulo-endothelial system and that other parts of this system might be primarily effective in destroying platelets has also been suggested (Kaznelson). It may be due to other undetermined causes. In this category the case of thrombopenic purpura with hemorrhagic episodes (table 4) might be classified. The patient was greatly improved clinically, the platelets increased in number and the bleeding episodes have markedly diminished. The bone marrow, however, has not returned to normal one year after splenectomy, and so the fundamental defect has not been entirely corrected.

CONCLUSIONS

1. Acute hemorrhage causes a uniform stimulation of the bone marrow with a myeloid, erythroid and megakaryocytic hyperplasia. The megakaryocytes are of the adult type. The hyperplastic marrow promptly returns to normal.

2. Chronic hemorrhage causes a similar hyperplasia. The megakaryocytes are usually of the adult type, but there may be many intermediate ones if the hemorrhage is repeated and exhausting. With abolition of the hemorrhages, the bone marrow returns to normal. Platelets are present in large numbers in the bone marrow and in the peripheral blood.

3. In essential thrombopenic purpura with hemorrhage there is a similar uniform hyperplasia of the bone marrow. In the more chronic cases without significant hemorrhage the myeloid and erythroid hyperplasia may be absent, but the megakaryocytic hyperplasia persists.

4. In essential thrombopenic purpura the megakaryocytes are of the young form. In the acute phase the promegakaryocytes predominate, in the less acute phases the adult type appears. Hyaline megakaryocytes which produce the large pseudoplatelets have been found only in essential thrombopenic purpura. Platelets are reduced equally in the bone marrow and in the peripheral blood.

5. Splenectomy causes the bone marrow to revert to normal. Unless this reversion is established, the bleeding episodes continue.

21. Brill, N. E., and Rosenthal, Nathan: Treatment by Splenectomy of Essential Thrombocytopenia (Purpura Haemorrhagica), *Arch. Int. Med.* 32: 939 (Dec.) 1923. Leschke, E., and Wittkover, E.: Die Werlhof'sche Blutfleckenkrankheit, *Ztschr. f. klin. Med.* 102: 6, 1926.

22. Nickerson, D. A., and Sunderland, D. A.: The Histopathology of Idiopathic Thrombocytopenic Purpura, *Am. J. Path.* 13: 463 (May) 1937.

23. Doan, C. A.; Moore, C. V., and Ross, T. F.: The Differential Diagnosis and Therapeutic Rationale of the Anemia States, *Ohio State M. J.* 33: 975 (Sept.) 1937. Rohr, K.: Die diagnostische Bedeutung der Sternalpunktion, *Helvet. med. acta* 1: 713, 1935. Bethell, F. H.; Isaacs, Raphael; Goldhamer, S. M., and Sturgis, C. C.: Blood—A Review of the Recent Literature, *Arch. Int. Med.* 61: 923 (June) 1938. Limarzi, L. R., and Schleicher, E. M.: Bone Marrow in the Active Phase of Essential Thrombocytopenic Purpura, *J. A. M. A.* 112: 879 (March 4) 1939.

24. Lawrence, J. S., and Knutti, R. E.: The Bone Marrow in Idiopathic Thrombopenic Purpura, *Am. J. M. Sc.* 188: 37 (July) 1934.

25. Morrison, M.; Lederer, M., and Fradkin, W. Z.: Accessory Spleens—Their Significance in Essential Thrombocytopenic Purpura Haemorrhagica, *Am. J. M. Sc.* 176: 672 (Nov.) 1928.

6. The view that essential thrombopenic purpura is a disease due to faulty maturation of the megakaryocytes is favored. Splenectomy removes a factor which is inhibitory to maturation.

7. The differential diagnosis of the symptomatic purpuras from other hemorrhagic states is not difficult.

8. The diagnosis of purpuric states can be made most satisfactorily from bone marrow studies. Such studies should lead to a more satisfactory classification of the purpuras.

ABSTRACT OF DISCUSSION

DR. CARL V. MOORE, St. Louis: There is little reason to doubt that the spleen functions abnormally in essential thrombopenic purpura. The vast majority of patients recover following splenectomy and the bone marrow nearly always contains an increased number of megakaryocytes, many of which are young forms. The spleen could theoretically produce the disease in one of two ways: (1) by destroying platelets at a greatly accelerated rate or (2) by inhibiting their formation. The authors interpret their observations as indicating a maturation arrest of the megakaryocytes in bone marrow. Their conclusions therefore favor the second of the two possible mechanisms stated. Similar implications were provided by the recent work of Troland and Lee, which described the preparation of an acetone extract of spleens removed from patients with essential thrombopenic purpura. The material was found capable of profoundly depressing the platelet count in rabbits. I have not been able to recover the platelet lowering factor in any of three thrombopenic purpura spleens studied to date. Perhaps the more commonly accepted view is that which considers the disease to be produced by excessive splenic destruction of thrombocytes, and the increase in megakaryocytes to be a compensatory phenomenon. I have been led to believe that this mechanism is the one primarily operative because of the decided increase in phagocytic cells usually observed in fresh smears taken from the parenchyma of these spleens. Neither interpretation excludes the possibility of a combination of the two types of abnormal splenic influence. Fortunately, the uncertainties of these etiologic considerations are dwarfed by the practical fact that splenectomy practically always induces a remission.

DR. W. M. FOWLER, Iowa City: There is a diversity of opinion as to whether thrombopenic purpura is due to a failure of the bone marrow to produce or liberate platelets or whether it is due to an overdestruction of the platelets by the spleen. I agree with the authors that splenectomy is the treatment of choice in the severe cases. I have had no success with irradiation of the spleen, and the use of transfusions is usually of only temporary benefit. I wish to emphasize the importance of establishing a correct diagnosis so as to be sure that one is dealing with the idiopathic or essential form of thrombopenic purpura rather than the secondary or symptomatic form before advising removal of the spleen. I made a study of the cases of thrombopenic purpura that had been seen in the University Hospitals and from a total of 160 cases only seventeen could be considered idiopathic. The remaining 143 cases were definitely secondary to some other disease. Various types of blood dyscrasias accounted for eighty-one of these, the most common being the lymphomas and leukemias, pernicious anemia and aplastic anemia. Thrombopenic purpura was definitely associated with an infectious process in twenty-five cases and in several of these repeated recurrences of the purpuric manifestations coincided with acute exacerbations of the infection and disappeared with the subsidence of the infection. Various toxins and chemicals accounted for six cases, and twelve were associated with various types of liver disease. The remaining nineteen were associated with a wide variety of miscellaneous diseases. Splenectomy is of no value in this larger group of secondary thrombopenic purpura and it is essential that these cases be excluded before the operation is advised. The diagnosis of idiopathic thrombopenic purpura must rest not only on the characteristic laboratory and clinical manifestations but on the rigid exclusion of all diseases which may cause the secondary form. Even after establishing idiopathic or essential thrombo-

penic purpura as the diagnosis, a splenectomy is not advisable in all cases. Certain of these are so mild that the operation is not necessary and in some the bleeding has been controlled by transfusions and there were no recurrences. In the more severe forms, however, splenectomy is the treatment of choice, and the methods of bone marrow study which have been described this morning are essential in the selection of cases for splenectomy.

DR. EDWARD P. FLOOD, Bronx, New York: I should like to report a case of toxic thrombopenic purpura following the administration of sulfapyridine. March 16 a man aged 32, a bricklayer, was admitted to the hospital with a diagnosis of unresolved pneumonia. He had been ill for over a month. Pneumococcus type XVI was found in the sputum, and sulfapyridine therapy was instituted. He received an average of 6 Gm. a day for ten days. March 28 he developed a severe hemorrhagic purpura. The drug was discontinued and treatment started, consisting of daily transfusions, parenteral calcium, snake venom and ascorbic acid. The hemorrhages ceased after twelve days. April 15, tubercle bacilli were found in the sputum. This calls attention to an additional hazard in the injudicious use of sulfapyridine.

DR. LOUIS R. LIMARZI, Chicago: In general we agree that sternal aspiration should be a routine procedure in all conditions diagnosed purpura haemorrhagica. There has been no ill effect in more than 900 bone marrow studies, even when the procedure has been frequently repeated. Splenectomy has been the only treatment in my experience that gives lasting results in essential thrombopenic purpura. There is no contraindication to splenectomy in the acute phase of this disease if the patient has been adequately prepared and the operation is performed by a competent surgeon.

LUDWIG'S ANGINA. RETROPHARYNGEAL ABSCESS

AND OTHER DEEP ABSCESES OF THE HEAD AND NECK

MANUEL GRODINSKY, M.D.

OMAHA

Although many common suppurative processes about the head and neck such as localized suppuration of the lymph nodes give little concern and are rather easily cared for, the less common spreading lesions such as Ludwig's angina, retropharyngeal abscess and other deep collections of the head and neck usually are the cause of considerable anxiety and call for a thorough knowledge of the anatomy of the regions concerned as well as adequate surgical judgment and skill. The seriousness of these conditions lies in their tendency to spread along fascial planes and invade the thorax, with the production of mediastinitis.

Because of the numerous discrepancies in description of the fasciae and fascial spaces of the head, neck and adjacent regions, my associate, Dr. Holyoke, and I undertook a study of these fasciae and spaces at the anatomy department of the University of Nebraska College of Medicine. During the last four years ninety-five adult cadavers and five full term fetuses were studied by the methods of dissection, injection and section. The following report is a brief summary of our observations.¹ In addition, all cases of Ludwig's angina, retropharyngeal abscess and other deep abscesses of the head and neck occurring at the University Hospital have been reviewed. A more detailed

From the Departments of Surgery and Anatomy, University of Nebraska College of Medicine.

Read before the Section on Surgery, General and Abdominal, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. Grodinsky, Manuel, and Holyoke, E. A.: The Fasciae and Fascial Spaces of the Head, Neck and Adjacent Regions, *Am. J. Anat.* 63: 367-408 (Nov.) 1938.

report of these cases has been made elsewhere.² It is my purpose here merely to emphasize the clinical implications of our anatomic observations.

FASCIAL LAYERS

The deep fascia of the neck may be divided into three main layers: superficial, middle and deep. The superficial layer crosses the midline of the neck anteriorly,

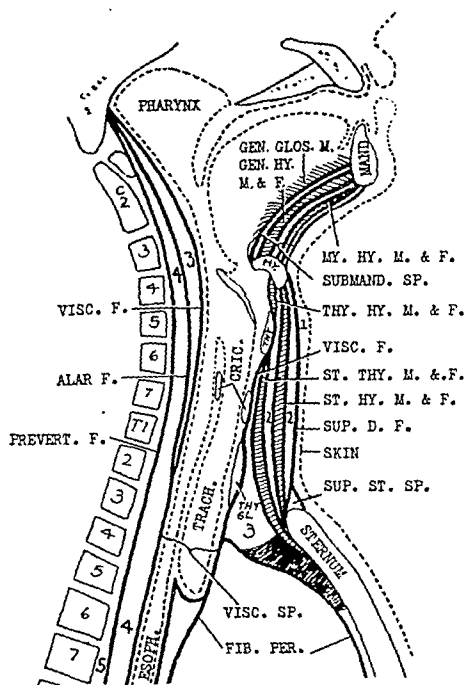


Fig. 1.—Fasciae of head and neck in midsagittal section.

covers the anterior triangle, splits to form the sheath of the sternocleidomastoid muscle, covers the posterior triangle, splits to form the sheath of the trapezius muscle and attaches to the spines of the vertebrae posteriorly. Just above the sternum it splits to form the suprasternal space of Burns and attaches to the anterior and posterior margins of the suprasternal notch (figs. 1, 2, 3, 4).

The middle layer consists of three subdivisions: the sternohyoid-omohyoid layer, the sternothyroid-thyrohyoid layer and the visceral layer. The first two of these surround the muscles indicated in their names and run into the deep surface of the sternocleidomastoid sheath laterally, fusing with the carotid sheath derived from the alar fascia (figs. 1, 2).

The visceral or pretracheal fascia, the deepest subdivision of the middle layer of deep cervical fascia, completely surrounds the thyroid gland, trachea and esophagus, thus forming the visceral space within which these structures lie. Each of these structures has in addition a capsule proper. Inferiorly the visceral fascia becomes continuous with the fibrous pericardium covering the heart and the great vessels of the thorax (figs. 1, 2, 3).

The deep layer of deep cervical fascia is composed of two subdivisions: the alar and the prevertebral layer, with the continuations of the latter (scalenus fascia, Sibson's fascia, transversalis fascia). The former, to our knowledge, has not been described before. It con-

sists of a layer of fascia lying in a frontal plane between the visceral layer (behind the esophagus) and the prevertebral layer. It attaches to the latter at the tips of the transverse processes of the vertebrae and then continues anterolaterally to form the carotid sheath, which fuses with the deep surface of the sternocleidomastoid and sternothyroid-thyrohyoid sheaths. The prevertebral fascia passes in front of the bodies of the vertebrae, fuses to the tips of the transverse processes and to the alar fascia and then extends inferolaterally as the scalenus fascia, which forms the covering of the scalenus muscles and the axillary sheath. The scalenus fascia is continuous with the extrapleural fascia of the thorax and the transversalis fascia of the abdomen. As it passes over the dome of the pleura, it is identical with the layer known as Sibson's fascia (figs. 1, 2, 3, 4).

The potential spaces between these fascial planes may be conveniently subdivided into those of the infrahyoid region and those of the suprahyoid region. The infrahyoid fascial spaces may in turn be roughly subdivided into those of the anterior and those of the posterior triangle, the former being designated by numerals and the latter by corresponding numerals followed by the letter A.

INFRAHYOID SPACES

Space 1 is the potential space between the skin and the superficial layer of deep fascia; that is, within the superficial fascia and containing the platysma muscles. Space 2 lies between the superficial layer of deep fascia and the deep surface of the sternothyroid-thyrohyoid layer. It is blind inferiorly at the origins of the ribbon muscles from the sternum. Space 2 A is the corresponding space in the posterior triangle, lying between the superficial layer of deep fascia and the sheath of the posterior belly of the omohyoid muscle. It is easily brought into communication with space 2 at the pulley

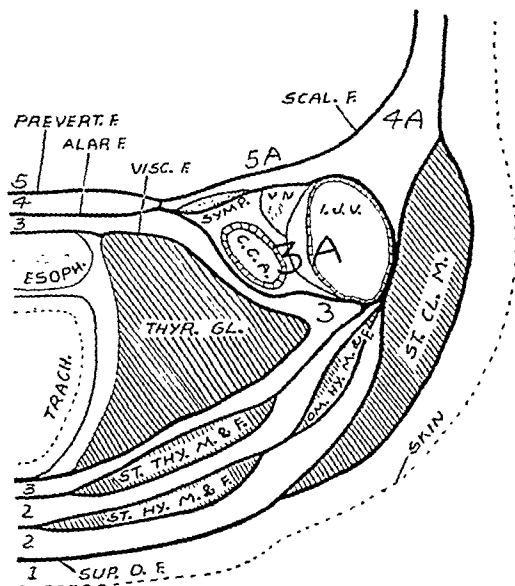


Fig. 2.—Fasciae of neck. Transverse section approximately at the level of the sixth cervical vertebra.

between the two heads of the omohyoid. Space 3 lies between the visceral fascia, on the one hand, and the sternothyroid-thyrohyoid layer, carotid sheath and alar fascia, on the other hand. On the anterior side, it extends inferiorly a short distance into the superior mediastinum, where it is shut off by adhesions between the fibrous pericardium and the sternum. On the pos-

2. Grodinsky, Manuel: Ludwig's Angina: An Anatomical and Clinical Study with Review of the Literature, *Surgery* 3: 678-696 (May) 1939; Retropharyngeal and Lateral Pharyngeal Abscess: An Anatomical and Clinical Study with Review of the Literature, *Ann. Surg.* 110: 177-199 (Aug.) 1939.

terior side, it extends from the base of the skull approximately to the sixth or seventh cervical vertebra, where the alar fascia becomes intimately fused with the visceral fascia, thus shutting off this space inferiorly (figs. 1, 2, 3).

A retropharyngeal abscess, extending through the posterior or lateral pharyngeal wall by lymphatics, veins or through traumatic wounds (foreign bodies), may

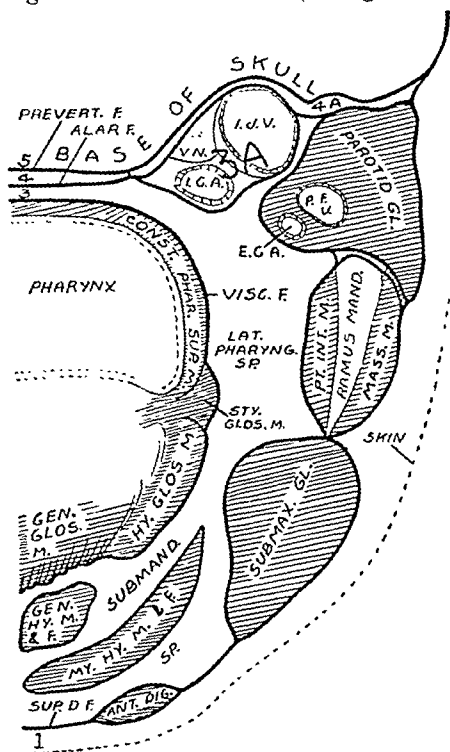


Fig. 3.—Fasciae of the head and neck. Oblique anteroposterior section showing the relation of the submandibular space to the lateral pharyngeal space and spaces 3 and 4.

involve the space between the posterior pharyngeal wall and the visceral fascia (visceral space), space 3 or space 4. In the former case it usually remains localized near its origin and can easily be evacuated by an incision through the mouth (Allen,³ McKenzie⁴). When it involves space 3, it may also remain localized and be treated that way; but it may extend laterally and inferiorly to the superior mediastinum, in which case external drainage along the anterior border of the sternocleidomastoid muscles becomes necessary (Burckhardt,⁵ Dean,⁶ Kanavel,⁷ Furstenberg⁸). When space 4 is involved primarily or secondarily, the infection is almost certain to spread inferiorly to the posterior mediastinum. Cervical or collar mediastinotomy (von Hacker,⁹ Pearse¹⁰) anterior to the sternocleidomastoid muscle is then necessary if the condition is early or confined above the fourth thoracic vertebra. Where the infection has extended below the fourth thoracic vertebra or where collar mediastinotomy has failed to

stop the process, dorsal mediastinotomy (Nasiloff¹¹) offers the only hope of saving life (figs. 1, 2, 3, 6).

In true Ludwig's angina¹² the infection often spreads to the lateral pharyngeal space and then to space 3. From there it may extend inferiorly to the superior mediastinum or go through the alar fascia into space 4 with further extension to the posterior mediastinum as just described. On the other hand, extension from space 3 to the lateral pharyngeal space and from there to the submandibular space may lead to a picture closely resembling Ludwig's angina in the later stages, even though the origin and early routes of spread in the two cases are entirely different (figs. 1, 2, 3, 6, 7).

Space 3 A is the space within the carotid sheath containing the carotid artery, internal jugular vein and vagus nerve. This potential space is very limited and bears but little relation to infections of the head and neck except those associated with thrombosis within the internal jugular vein and with the lymph nodes lying within the sheath (figs. 2, 3).

Space 4, between the alar and the prevertebral fascia, extends from the base of the skull to the posterior mediastinum. Laterally it extends to the tips of the transverse processes to which both the alar and the prevertebral fascia attach. Because of its relationship to the posterior mediastinum it is called the "danger

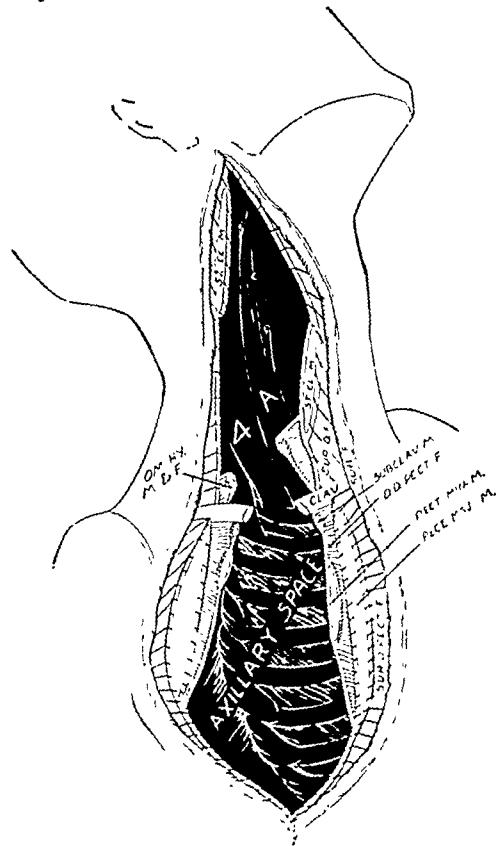


Fig. 4.—Fascial relations between the posterior triangle of the neck and the axilla.

space," and justly so, since infection within it, either primary or secondary, is almost certain to extend into the posterior mediastinum. As already shown, it may become involved, either primarily or secondarily, in retropharyngeal abscess and in Ludwig's angina. Such involvement must be recognized early by the symptoms

11. Nasiloff, J. J.: Oesophagotomia et resectio oesophagi endothoracica. *Vruch* 9: 481, 1888.
12. Ludwig, D.: *Med. Cor.-Bl. d. württemb. ärztl. Ver.* 6: 21-25, 1836.

3. Allen, C. M.: Retropharyngeal Abscess, New York M. J. 7: 307-342, 1851.
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6. Dean, L. W.: The Proper Procedure for External Drainage of Retropharyngeal Abscess Secondary to Caries of the Vertebrae, *Ann. Otol., Rhin. & Laryng.* 28: 366-372 (June) 1919.
7. Kanavel, A. B.: Retropharyngeal Abscess, *S. Clin. North America* 2: 603-615 (June) 1922.
8. Furstenberg, A. C.: Acute Mediastinal Suppuration, *Tr. Am. Laryng., Rhin. & Otol. Soc.* 35: 210-229, 1929.
9. von Hacker: Zur operativen Behandlung der periesophagealen und mediastinalen Phlegmone nebst Bemerkungen der collaren und dorsalen Mediastinotomie, *Arch. f. klin. Chir.* 64: 479-508, 1901.
10. Pearse, H. E., Jr.: Mediastinitis Following Cervical Suppuration, *Ann. Surg.* 108: 588-611 (Oct.) 1938.

(such as pain in the chest), physical abnormalities (such as dulness and diminished breath sounds) and x-ray appearances, and adequate treatment must be instituted, if life is to be saved (figs. 1, 2, 3, 6, 7).

Space 4 A, between the superficial layer of deep fascia and the scalenus fascia, is directly continuous with the axilla (fig. 4), but a dense fatty pad between the clavicle and the first rib makes this communication less free. Space 5 lies behind the prevertebral fascia and is of importance chiefly in directing the course of cold abscesses resulting from tuberculous caries of the vertebral bodies (figs. 1, 2, 3, 8). Space 5 A, deep to the scalenus fascia, lies between the deep muscles of the neck—the scalmi, the levator scapulae and the sacrospinalis (fig. 2).

SUPRAHYOID SPACES

The suprahyoid spaces comprise the masticator, temporal, parotid, lateral pharyngeal and submandibular spaces. The masticator space (Coller and Yglesias,¹³

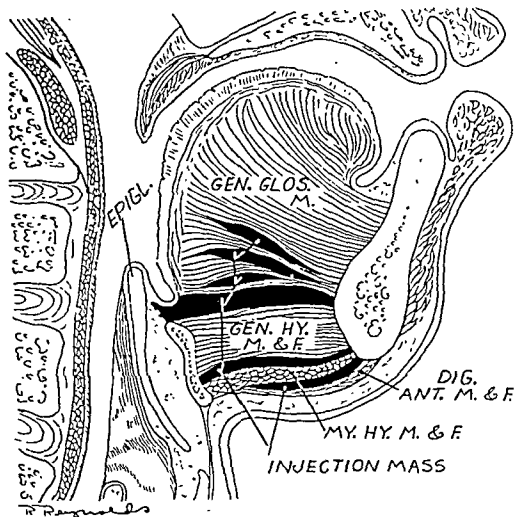


Fig. 5.—Median sagittal section showing collection of injection masses between submental muscles and particularly the extension of the mass between the genioglossus and geniohyoid muscles toward the epiglottis.

Juvara¹⁴), enclosed by the superficial layer of deep fascia, contains the masseter muscle, the pterygoid muscles and the ramus of the mandible and is continuous superiorly with the temporal space deep to the temporal fascia (superficial layer of deep fascia). Extension from these spaces may occur superficially in the face or deeply into the parotid, lateral pharyngeal or submandibular spaces. The parotid space we found to be a completely closed space formed by a split of the superficial layer of deep fascia (Juvara,¹⁴ Coller and Yglesias,¹³ Singer,¹⁵ Merkel,¹⁶ Charpy,¹⁷ fig. 3).

The lateral pharyngeal space (Coller and Yglesias,¹³ Mosher¹⁸), bounded by the pharynx, styloid muscles, carotid sheath, parotid gland, pterygoid muscles, mandible, masseter muscle and pterygomandibular raphe, communicates freely with the submandibular space deep

to the submaxillary gland. Both spaces are shut off from the neck by the attachment of the sheaths of the stylohyoid muscle and posterior belly of the digastric muscle to the superficial layer of deep fascia superficially and to the carotid sheath deeply. Postero-medially, the lateral pharyngeal space communicates with space 3, from which it may become infected in

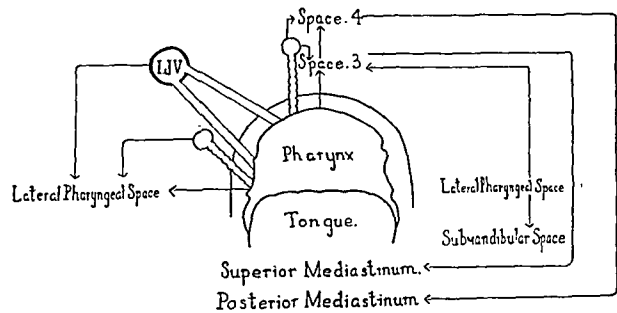


Fig. 6.—Routes of spread of infection by lymphatics, veins and fascial spaces in acute retropharyngeal abscess. The arrows indicate direct extension, the straight tubes veins, and the scalloped tubes lymph vessels.

retropharyngeal abscess. Infection in this space may travel in the reverse direction and involve space 3. This space may also be infected directly from the lateral wall of the throat (tonsils) and secondarily from the submandibular, parotid or masticator spaces. Likewise, infections in this space may spread to the submandibular space and in later stages resemble true Ludwig's angina. Abscess of the lateral pharyngeal space is best drained by a T incision (Mosher¹⁸) below the angle of the jaw in front of the sternocleidomastoid muscle, the submaxillary gland being displaced and the dissection carried bluntly along the carotid artery until the focus is reached (figs. 3, 6, 7).

"Submandibular space" is the term we are using to indicate the regions of the submental and submaxillary triangles lying between the mucous membrane of the floor of the mouth and the superficial layer of deep fascia over these regions. It contains the sublingual and submaxillary salivary glands and the genioglossus; geniohyoid, mylohyoid and digastric (anterior belly) muscles, and its floor is made up of the hyoglossus and superior pharyngeal constrictor muscles (figs. 1, 3, 5, 7).

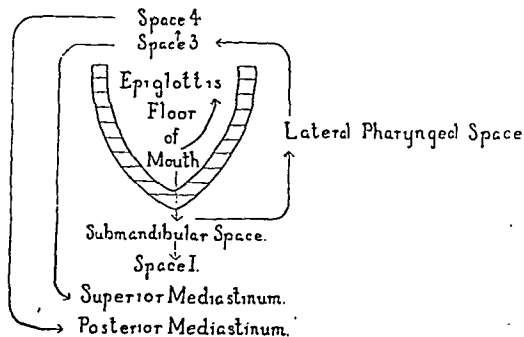


Fig. 7.—Routes of spread of infection by fascial spaces in Ludwig's angina.

In is infected from carious lower molar teeth or from injury to the mucous membrane of the floor of the mouth, by direct extension. The term Ludwig's angina should be reserved, in my opinion, to this type of infection, spread by fascial planes and not by lymphatics. The infection may spread from the submandibular space to the lateral pharyngeal space and to space 3 by direct continuity. From space 3 it may extend inferiorly to the superior mediastinum or go

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through the alar fascia into space 4, from which it may spread inferiorly to the posterior mediastinum. It is this relationship to the superior and the posterior mediastinum that makes Ludwig's angina so dangerous. Aside from suffocation due to edema of the glottis and tongue, mediastinitis is the most common cause of death in this condition. The edema of the glottis may result from submucous spread of the infection to the larynx or between the genioglossus and geniohyoid muscles to the epiglottis (figs. 5, 7).

The dangers of suffocation and mediastinitis are best avoided by early and adequate drainage. Incision may be made vertically in the midline or transversely below the body of the mandible, or a combination of the two methods may be used. The midline incision is indicated for obvious collections in the submental region,

but it often fails to drain adequately collections lying more laterally. The lateral incision is more effective in the majority of cases. It must include excision or displacement of the submaxillary gland (Colp¹⁹) and may well be combined with the median

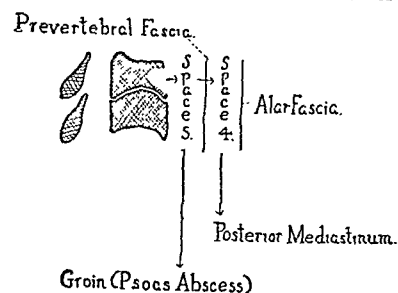


Fig. 8.—Routes of spread of infection by fascial spaces in chronic retropharyngeal abscess.

incision. In any event, the opening must be carried deeply to, but not through, the mucous membrane of the floor of the mouth (figs. 1, 3, 5). Spread of the infection to the superior or posterior mediastinum demands additional drainage by cervical or dorsal mediastinotomy as described.

SUMMARY AND CONCLUSIONS

1. The early recognition and proper management of Ludwig's angina, retropharyngeal abscess and other deep abscesses of the head and neck call for thorough knowledge of the anatomy of the regions concerned as well as for adequate surgical judgment and skill.

2. The seriousness of these conditions lies in their tendency to spread along fascial planes and invade the thorax with the production of mediastinitis.

3. A study of the fasciae and fascial spaces of the head, neck and adjacent regions was made. This was based on dissection, injection and section of ninety-five adult cadavers and five full term fetuses.

4. The spaces involved in Ludwig's angina, retropharyngeal abscess and other deep abscesses were observed and the possibilities of spread noted.

5. The location of surgical incisions for drainage of these abscesses, based on the spaces involved, were determined.

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ABSTRACT OF DISCUSSION

DR. FREDERICK A. COLLIER, Ann Arbor, Mich.: Dr. Grodzinsky has drawn to our attention a very important surgical problem. Infection in the face and neck spreads in three ways. It may spread through the blood stream, through the lymphatics or in continuity along fascial planes. For clinical purposes, fascia may be divided into two groups: first, that which surrounds muscle and which is attached to bone—the musculofascial type, which tends to limit the spread of infec-

tion; second, the fascia that surrounds the viscera and blood vessels, which tends to diffuse infections as blood vessels pass from one part of the body to another. Dr. Yglesias and I described three fascial spaces in the face: the space of the body of the mandible, the masticator space and the parotid space. The space of the body of the mandible is infected usually through abnormal teeth and there is frequently an osteomyelitis of the horizontal ramus associated with it. This space is easily drained by an incision through the mucous membrane of the vestibule or by an incision through the skin along the inferior border of the body of the mandible. The masticator space extends upward from this and in it lie the ascending ramus of the mandible with the masseter muscle and pterygoid muscle. It is continued upward on both sides of the temporal muscle. Either the superficial or the deep temporal pouch may be involved. This can easily be drained along the anterior border of the masseter muscle, and the temporal spaces can be drained by a vertical incision placed posterior to the frontal process of the malar bone. The third fascial space is occupied by the parotid gland, and this can be drained easily by the method of Blair. It should be emphasized that the parotid gland may be infected secondarily to an infection in the lateral pharyngeal space, or infection may pass from the parotid to this space. Dr. Grodzinsky stressed the possibility of infection spreading from the lateral pharyngeal space to the potential spaces underneath the tongue. Our anatomic studies do not corroborate this and we feel that the term Ludwig's angina should be limited to infections in the spaces between the mylohyoid and the geniohyoid or between the geniohyoid and the genioglossus muscles. These spaces can be drained internally if they present there or externally should they present in the submental region. In draining the lateral pharyngeal pouch, we prefer to lift the deep portion of the parotid gland and pass anterior to the carotid sheath rather than to use the method described by Mosser and discussed by Dr. Grodzinsky; that is, to introduce the drain along the submaxillary gland.

DR. LOUIS J. BIRSNER, St. Louis: Many years ago I realized the hopelessness of presenting these complex problems. To simplify it I made a series of photographs of the human body, in which I was able to trace in twenty-four photographs the fascial planes from the skin inward and from the base of the skull downward to the mediastinum. I will show a series of slides, which are made in the most simple manner, so that every one can follow them and readily remember what is illustrated. The incision along the anterior border of the sternomastoid high in the neck is still the best surgical approach in the majority of cases to deep pus in the neck. Using a gloved finger and having the surgical judgment to complete the job, in 90 per cent of the cases, if deep pus is there one will find it in this approach. Behind the posterior border of the sternomastoid high in the neck is the best place to approach pus, tuberculous pus and pus from caries of the body of the second cervical vertebra. In the lower part of the neck along the anterior border of the sternomastoid is the best approach to the upper mediastinal infections. I was able to drain an upper localized, walled-off mediastinal abscess by a long incision following the posterior border of the sternomastoid, separating the clavicular attachment of the sternomastoid and dividing the omohyoid muscle. By displacing the carotid sheath and its contents anteriorly I was able to palpate this mass in the mediastinum from above and rupture it. With my hand in place I directed a long uterine dressing forceps with a Penrose rubber dam into this mass and kept it in place for three weeks. This child is living and well today.

The Right to Health.—As comparatively short a time ago as 1874, Sir John Erichson stated as his opinion that "the abdomen, the chest and the brain would be for ever shut from the intrusion of the wise and humane surgeon," but no one would venture an opinion today as to where a boundary line is to be drawn. As long as disease exists it is our duty, and the duty of those working in allied sciences, to find a means of prevention, or a better remedy. Our patients claim the right to health and we cannot, we dare not, break faith with them.—Roberts, H. H.: *If Health be Wanting, Edinburgh M. J.* 46:725 (Nov.) 1939.

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REGENERATION OF EPIPHYSIAL CENTERS OF OSSIFICATION

FOLLOWING DESTRUCTION BY PYOGENIC OR
TUBERCULOUS INFECTION: REPORT
OF FIVE CASES

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CHICAGO

Infection of the epiphysis of a long bone is usually secondary to suppurative arthritis or osteomyelitis of the adjacent metaphysis. Rarely the epiphysis may be the site of primary hematogenous infection.

In adults and older children the contacted articular cartilage is frequently destroyed in pyogenic arthritis, exposing the epiphysal bone, which becomes secondarily infected and predisposes to ankylosis. The cartilaginous portion of the epiphysis in young children is relatively thick as compared to the osseous center, so that even extensive cartilage absorption may not expose the ossification center, and ankylosis is less common. But if such a center of ossification is infected, it may be partly or completely destroyed, while the thick cartilaginous portion of the epiphysis is preserved to a greater or lesser degree. Destruction of the osseous center is particularly apt to occur if the infection interferes with its blood supply, as may be the case when the round ligament is destroyed. The remaining cartilaginous portion of the epiphysis may collapse, resulting in a flattened and deformed epiphysis. A center of ossification may subsequently reappear with partial or complete restoration of the bony epiphysis and more or less continuation of longitudinal growth of the shaft. These changes are illustrated by the following five cases:

REPORT OF CASES

CASE 1.—E. A. S., a girl baby aged 17 days, was admitted to the outpatient department of the University of Chicago Clinics June 17, 1929. Examination revealed a large fluctuant and tender swelling of the right knee of one day's duration. A roentgenogram showed erosion of the distal medial metaphysal region of the right femur, in the center of which was an area of increased density. A diagnosis of acute osteomyelitis was made. The abscess was incised and *Staphylococcus aureus* was cultured from the pus obtained. An associated pyarthrosis subsided after repeated aspiration. A similar type of infection developed in the right shoulder joint, which was also incised and drained. All drainage had ceased after two and a half months and the patient used the knee and shoulder through a functional range of motion. Sept. 18, 1931, there was a moderate degree of lateral bowing of the leg, but the range of motion was normal. The patient was not seen again until July 8, 1936, at which time she complained of recurrent pain in the right shoulder with loss of function. Roentgenograms showed osteomyelitis of the right humerus, which was successfully treated by surgery. Unfortunately roentgenograms were not obtained of the right femur, but on physical examination the leg appeared straight and the function of the knee was normal. However, roentgenograms taken May 6, 1939, showed a remarkable recovery of the right femur with complete development of the ossification center of the lower femoral epiphysis and continuation of longitudinal growth of the shaft. The legs were equal in length and the patient's gait was normal.

This study was aided by a grant from the Douglas Smith Foundation for Medical Research.
From the Division of Orthopaedic Surgery, Department of Surgery, the University of Chicago.

Read before the Section on Orthopaedic Surgery at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.
Owing to lack of space, this article is abbreviated in *THE JOURNAL* by the omission of illustrations for cases 3, 4 and 5; these will appear in the authors' reprints.

A roentgenogram (fig. 1A) taken at the age of 5 weeks revealed extensive destruction of the distal medial portion of the metaphysis of the right femur, with marked periosteal new bone formation. The epiphysal shadow, centrally placed, was well shown.

A roentgenogram (fig. 1B) taken at the age of 9 months showed extensive reparative change in the distal end of the femur. There was, however, definite shortening of the diaphysis on the medial side. The distal extremity of the metaphysis, which represented the location of the epiphysal cartilage plate, sloped sharply upward and medially. The ossification center of the distal lateral condyle of the femur was well preserved, but no osseous center could be demonstrated for the medial condyle. Judging from the x-rays, the inflammatory process had extended across the epiphysal cartilage plate, involving not only the metaphysal region of the shaft but also the epiphysis, with resultant growth retardation of the mesial half of the metaphysis.

A roentgenogram (fig. 1C) taken at the age of 19 months showed a center of ossification in the epiphysis of the medial condyle. Growth was definitely taking place from the epiphysal cartilage plate completely across the diameter of the shaft, but the sloping deformity of the epiphysal line was still present and a bow-leg deformity persisted.

The roentgenogram (fig. 2) taken ten years after the onset showed a complete regeneration of the ossification center of the distal femoral epiphysis with an open but irregular epiphysal line and correction of the varus deformity of the knee. The distal third of the shaft was broadened and the mesial half of the epiphysis slightly reduced in size, while the lateral portion was somewhat enlarged as compared to the normal left femur.

It cannot be definitely stated whether or not the medial portion of the epiphysal center was actually destroyed by pyogenic infection or became absorbed as a result of disturbed blood supply resulting from the extensive involvement of the metaphysis. Since there was an osteomyelitis of the shaft and pyarthrosis of the knee joint, it would seem logical to assume that the infection had involved the mesial portion of the epiphysis and had caused sufficient destruction so as to interfere with its ossification and to some extent with longitudinal growth. Some time after healing of the osteomyelitis, a bony center appeared and longitudinal growth was resumed. This progressed to complete regeneration of the epiphysis and restoration of normal accretion of bone length from the epiphysal plate, as shown by figure 2.

CASE 2.—R. V., a boy aged 1 year, was first seen Sept. 7, 1932, six months after the onset of an acute pyogenic arthritis of the left hip. The infection had gradually subsided without surgical intervention. Examination on admission revealed some pain on extreme ranges of motion, but there was no palpable swelling or muscle spasm, and the two extremities were of equal length.

A roentgenogram (fig. 3A) taken September 15 showed complete absence of a center of ossification for the capital epiphysis of the femur. There was a slight lateral luxation of the hip, but the space from the proximal end of the neck of the femur to the superior portion of the acetabulum was not markedly diminished, suggesting that it was filled by a remnant of unossified epiphysis. There was slight shortening of the neck with a cup-shaped shadow of reduced density outlined by a narrow zone of increased density extending downward into it.

Because of tendency to subluxation, a shelf operation was then performed by the implantation of two tibial bone pegs. Fourteen months after the operation roentgenograms (fig. 3B) revealed an adequate acetabulum with further relative shortening of the neck, and a faint shadow of ossification was present proximal to it in what remained of the head.

On examination at the age of 7 years the patient had no pain but walked with a mild limp, which resulted in part from the shortening of the leg of approximately 2 cm. The range of motion was complete and the hip was stable. A roentgeno-

gram (fig. 4) revealed a moderate coxa vara with shortening of the neck of the femur but with a remarkable degree of regeneration of the center of ossification of the capital epiphysis. It was of normal breadth at the base but was reduced approximately one half in height. The epiphysal line was irregular and apparently closed in its lateral portion. The acetabulum was slightly irregular and increased in obliquity in its iliac region. The neck was shortened and the greater trochanter was high with irregularity and narrowing of its epiphysal line,

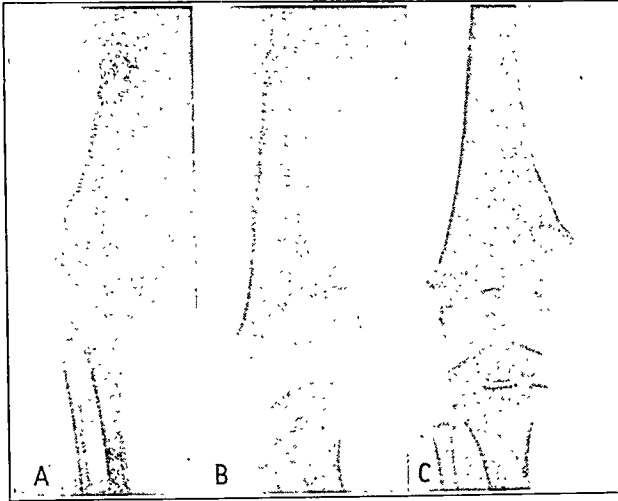


Fig. 1 (case 1).—A, three weeks after onset of acute osteomyelitis of right femur: extensive destruction of metaphysis with periosteal new bone formation and the bony center of epiphysis centrally placed; B, eight and one-half months after onset: reparative changes in, but shortening of, medial side of diaphysis and absence of ossification center for medial condyle of femur; C, eighteen and one-half months after onset: further repair of shaft and reappearance of bony center of medial half of epiphysis.

as compared with the other side. The cartilage space of the joint was increased in width about 50 per cent over that of the opposite normal hip. Apparently there had been some longitudinal growth of the shaft through the epiphysal line of the neck.

CASE 3.—M. B., a girl aged $7\frac{1}{2}$ years, a patient of Dr. Philip Lewin, was first seen in consultation Feb. 29, 1933, because of a progressive shortening of the right leg. The hip joint had been incised at the age of 7 weeks because of suppurative arthritis, and drainage had continued for several months. She began to walk at 16 months without pain or noticeable limitation of motion. The involved extremity became progressively shorter than the left during the ensuing four years and necessitated a raise on the right shoe.

Examination revealed slight limitation of motion in the right hip, but there was no pain or swelling.

A roentgenogram (fig. 5 A) taken four and one-half months after the onset of the symptoms when the patient was 6 months of age showed extensive bone destruction in the metaphysal region of the right femur, complete absence of a center of ossification for the capital epiphysis and an apparent lateral displacement of the upper end of the femur from the acetabulum.

Roentgenograms at the age of 9 months (fig. 5 B) showed marked repair of the lesion in the metaphysis with the regeneration of a small fragment of the neck but without reappearance of the center of ossification.

However, at the age of 18 months a faint shadow of beginning ossification in the region of the capital epiphysis was observed in the roentgenogram (fig. 5 C).

Another roentgenogram (fig. 6 A) at the age of 2 years and 7 months showed a spurlike shadow of regenerated inferior portion of the neck (x) with enlargement of the shadow in the mesial portion of the head above it (y) and also a shadow of a center of ossification in the region of the greater trochanter (z), which was irregular as a result of growth disturbance and lay directly above the shaft with the epiphysal line running transversely.

At the age of 5 years and 8 months (fig. 6 B) these centers of ossification had enlarged and fused, while the deformed

neck was bent downward into a position of coxa vara. The epiphysal line below the deformed fused epiphyses of head and greater trochanter was irregular and curved upward and outward. There was an incomplete line of reduced density demarcating the regenerated mesial from the lateral portion of the neck.

A subtrochanteric osteotomy was performed at the age of 9 years and healing obtained with the shaft in abduction.

A roentgenogram at the age of 12 years and 9 months (fig. 6 C) showed obliteration of the wavy epiphysal line between the fused head and greater trochanter proximally and the neck and lateral portion of the shaft distally. The head was relatively small and deformed, but there remained only a moderate coxa vara.

Because teleroentgenographic measurements at the age of 8 years revealed shortening of the right leg of 6.5 cm., an epiphysiodesis was performed on the left lower femoral epiphysis. In spite of this attempt to equalize the length of the legs, three years later the left leg was still 6 cm. longer than the right. Since the patient was then 11 years old a surgical arrest of the upper and lower left tibial and fibular epiphyses was done. Subsequently she increased little in height and at the time of the last examination, at the age of 12 years and 9 months, the right leg was still 4 cm. shorter than the left. However, the patient's gait and appearance were considerably improved.

CASE 4.—R. G., a girl aged 2 years, was first seen July 3, 1930, eight weeks after the onset of an acute pyogenic infection of the right hip. A fluctuant mass over the medial aspect of the joint had been incised and drained. Examination on admission revealed an incision 2 cm. in length over the right hip, exuding a purulent drainage which ceased ten days later. A roentgenogram ten days after admission (fig. 7 A) showed lateral displacement of the head of the right femur with the shadow of the capital epiphysis irregularly reduced in size and a cup-shaped loss of bony shadow in the juxta-epiphysal region of the neck. The shadow of acetabular cortex of the ilium was moderately reduced in density and slightly more oblique than that of the opposite hip.

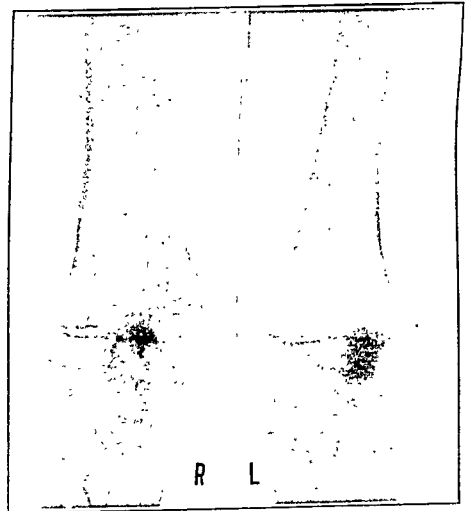


Fig. 2 (case 1).—Ten years after onset: complete regeneration of ossification center of the distal femoral epiphysis with an open but irregular epiphysal line and correction of the varus deformity.

Twenty-six days after admission the right hip joint was exposed; the capsule was relaxed and distended and the round ligament was gone. A sinus extended into the center of ossification of the head at the fovea, and through this opening it was possible to curet and remove a portion of the dead bony center. The hip was held in an abduction cast for one month. Microscopic examination showed pyogenic inflammatory tissue and guinea pig inoculation was negative for tuberculosis.

Roentgenograms (fig. 7 B) one month after the operation showed further loss of the shadow of the center of ossification and depression of it into the cup-shaped defect in the neck. The

remaining portion of bony head now appeared to have a relatively greater density than that of the surrounding living bone, indicating that it was necrotic. There was evidence of beginning repair of the bone in the metaphysial portion of the neck. The sinus healed six weeks later, when walking was begun.

Roentgenograms (fig. 8A) eleven months after the onset showed complete disappearance of the devitalized remnant of the capital epiphysis, a broad short neck and a sloping, irregular acetabulum in the iliac region.

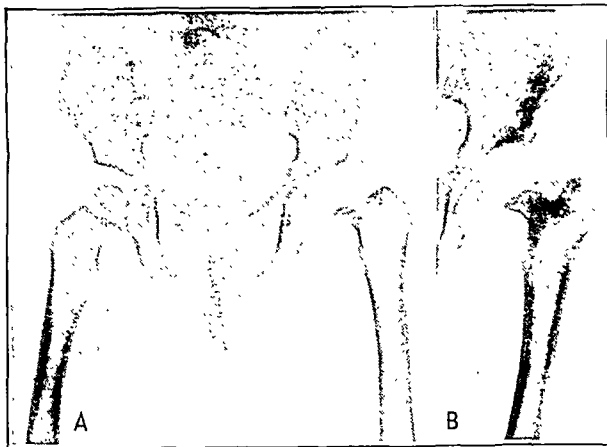


Fig. 3 (case 2).—A, six and one-fourth months after onset of acute pyrogenic arthritis; absence of ossification center for left capital femoral epiphysis and cup-shaped defect in metaphysis; B, twenty-one months after onset; relative shortening of neck and beginning reossification of epiphysis.

A roentgenogram (fig. 8B) twenty-two months after the onset showed a faint shadow of a bony center in the flattened deformed epiphysis at the top of the shaft.

Examination of the patient twenty-six months after the onset showed the involved extremity to measure 2 cm. shorter than the left. A roentgenogram (fig. 8C) then revealed further regeneration of the center of ossification of the capital epiphysis. During the subsequent years the hip became progressively more prominent and the limb shorter than the left.

Five and a third years after the onset a roentgenogram (fig. 8D) revealed a triangular shadow of a capital epiphysis, thickest at its superior portion and narrowing progressively downward, where it terminated in a thin layer short of the lower end of the irregular epiphysial line. The neck of the femur was markedly widened and shortened, indicative of retardation of longitudinal growth. The oblique acetabulum not longer accepted the deformed head of the femur, which had a tendency to subluxate.

At the age of 8 years there was 3.5 cm. difference in length between the legs, and since this discrepancy was increasing an epiphysiodesis of the lower end of the normal left femur was performed. At the age of 10 years and 8 months the right greater trochanter was prominent and displaced upward, but the difference in length of the two limbs was then only 1.5 cm. However, the operation of epiphysiodesis promises to give equalization of limb length by the time longitudinal growth ceases. The patient walked well and without pain, although there was still some limp. Flexion was possible to 110 degrees, but extension was limited short of 20 degrees and abduction was possible through an arc of only 20 degrees. A roentgenogram at that time (fig. 9) showed apparent fusion of the deformed neck and capital epiphysis and a shallow, oblique and inadequate acetabulum. The greater trochanteric epiphysis had grown upward past the level of the midportion of the acetabulum and showed evidence of premature fusion, as is seen in cases of slipped femoral epiphysis and subsequent fusion with the neck.

The loss of the center of ossification of the capital epiphysis in this case was definitely established at operation. However, the cartilaginous portion of the epiphysis was preserved in a flattened condition. The intermediary growth cartilage was involved to such a

degree that longitudinal growth of the neck was considerably interfered with, in spite of the fact that subsequently an irregular flat bony center reappeared and enlarged in the epiphysis itself.

CASE 5.—T. C., a girl aged 2 years, was first seen April 4, 1929, after she had refused to walk for three weeks because of pain in the left hip. Examination revealed tenderness over the hip and pain on forced extension and internal rotation. The joint was aspirated but no pus was obtained. Roentgenograms (fig. 10A) showed partial absorption of the ossification center of the capital epiphysis and a mottled appearance of the juxta-epiphysial region of the neck of the left femur.

The hip was immobilized in a plaster cast and four and one-half months later a roentgenogram (fig. 10B) showed further absorption of the ossification center of the capital epiphysis and a portion of the remainder had a relatively greater density than the surrounding bone, suggesting that it was necrotic. The epiphysis had been slightly depressed into a cup-shaped area of destruction in the metaphysis. There was a broad central streak of decreased density extending downward in the neck and first part of the shaft with finely stippled increase of density within its lower portion.

The patient was not seen again until March 7, 1931, when she was 4 years of age. A roentgenogram (fig. 11A) then revealed almost complete absorption of the ossification center of the capital epiphysis but some evidence of repair of the lesion in the upper end of the shaft. The neck was somewhat shorter and broader than that of the normal side, indicating growth retardation at the epiphysial plate, which had assumed a horizontal position.

Immobilization of the hip in plaster was continued and a roentgenogram (fig. 11B) taken at the age of 4½ years showed further evidence of repair with an increase in the amount of ossification in the capital epiphysis. There was a tendency for the externally rotated and broadened upper end of the femur to subluxate, although the acetabulum appeared normal.

Examination at the age of 5 years and 8 months revealed marked limitation of motion of the hip joint, but the legs were equal in length. A roentgenogram (fig. 12A) showed almost complete reformation of the ossification center of the capital epiphysis, although it was not as large as that of the nondiseased but somewhat flattened head on the other side. The epiphysial



Fig. 4 (case 2).—Six and one-half years after onset; remarkable regeneration of osseous center of capital epiphysis but moderate coxa vara.

line was slightly V shaped, indicative of interference with longitudinal growth in its central portion. The cystlike areas in the neck had been almost completely replaced by normal-appearing bone.

A biopsy was performed Dec. 19, 1932, when the patient was 5 years and 9 months old. The head of the femur was found to be anteriorly dislocated but the articular cartilage was well preserved. The synovial lining appeared normal and a portion removed was subsequently shown to be negative for tuberculosis by microscopic examination and guinea pig inoculation. After the capsular incision was closed, the shaft

of the femur below the greater trochanter was exposed and was found to contain pus and thick, cheesy, inspissated material which, by the foregoing tests, proved to be tuberculous. Both incisions healed by primary intention.

When she was 7 years old the anterior portion of the acetabulum was reinforced by the implantation of a full thickness bone peg taken from the lower end of the shaft of the left femur, where also an osteotomy was performed in an effort to correct the external rotation of the limb.

Roentgenographic studies (fig. 12 B) at the age of 9½ years showed little evidence of improvement in the position of the hip but complete regeneration of the ossification center of the capital epiphysis. Longitudinal growth was definitely occurring from the slightly V-shaped epiphysal plate of the neck and also from the greater trochanter.

The patient was last examined Feb. 7, 1939, at the age of 12 years. The hip was painless and the gait was good in spite of 1.5 cm. shortening of the left leg. Flexion and abduction was limited but could be increased by internal rotation of the extremity. Roentgenograms (fig. 12 C) showed complete regeneration of the ossification center of the capital epiphysis but little improvement in the inadequate acetabulum and position of the hip. Longitudinal growth had apparently occurred completely across the epiphysal plate of the neck and also from the greater trochanter, as evidenced by the increase in length of the neck and relative upward displacement of the greater trochanteric epiphysis. The epiphysal line between the head and the neck now appeared to be undergoing premature closure.

The extensive destruction of the center of ossification of the head of the femur in this case was the result of direct invasion of the tuberculous process from the neck of the femur. Owing to some fortuitous circumstance, this did not break through the articular cartilage or neck and involve the hip joint. Regeneration of the osseous center of the epiphysis occurred almost simultaneously with improvement of the condition of the neck. The subsequent growth in length of this extremity has been relatively normal, indicating that growth may continue, although a part of the central portion of the epiphysal cartilage plate has been destroyed.

COMMENT

The preceding clinical cases illustrate the capacity of the ossification centers of epiphyses of young children to regenerate after they have been partly or completely destroyed from extension by continuity of pyogenic or tuberculous infections. This ability to regenerate the bony centers appears to be directly related to the amount of cartilage that survives. Varying degrees of longitudinal growth of the shaft took place through what remained of the epiphysal cartilage plate. The exact extent of the injury to the various components of the epiphysis could not always be determined by roentgenographic examinations. In case 1 the cartilage of the mesial half of the lower femoral epiphysis was undoubtedly preserved, although the ossification center was completely lost and longitudinal growth of the corresponding portion of the shaft was temporarily retarded. Subsequently the center in the epiphysis and longitudinal growth of the shaft were restored to normal. In case 3 the center of ossification of the capital femoral epiphysis became necrotic and was removed, partly by operation and partly by absorption. Most of the cartilaginous portion was found at operation to be preserved but flattened. In all cases the persistence of a broad space in the epiphysal region, which did not cast a shadow of bony density in the roentgenograms, was indicative of the preservation of cartilage and this assumption was verified by the subsequent appearance of centers of ossification.

CONCLUSION

1. Epiphysitis in four young children, produced by pyogenic organisms, resulted in partial to complete destruction of the centers of ossification but with preservation of varying amounts of the cartilaginous portions. Subsequently in each case there was reappearance of a bony center with progressive growth and ossification of the remaining cartilaginous epiphysis.

2. Marked destruction of the bony center of the capital epiphysis with subsequent reossification was observed in one case of tuberculosis, primary in the neck of the femur.

3. Longitudinal growth of the shaft continued in each case. This indicated a remarkable degree of preservation of the growth cartilage disk in the presence of extensive destruction of the epiphysis itself.

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ABSTRACT OF DISCUSSION

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: This has been a most instructive study in the physiology of bone. The authors have demonstrated the fact that it is possible, after a severe infection and apparent destruction of the epiphyses, to have the formation of new epiphyses. Whether there is a formation of a new epiphysis or whether it is due to the remainder of the old epiphysis cannot be determined, but from that practical point this has been demonstrated in five cases. These conditions are somewhat analogous to osteomyelitis under the age of 3, in which there may be complete regeneration after extensive destruction; the entire shaft may be replaced by normal bone. Also in the very young there may be a complete replacement of a necrotic head, which is not possible after the age of 12, when the head will remain indefinitely as a necrotic mass, often with persistent drainage. In coxa plana the head may be completely restored to normal size and shape, even after complete separation of the upper femoral epiphysis. These cases also demonstrate two important physiologic factors, functional adaptation and inherent reproduction of form, nature's habit of the restoration of a part of the same pattern as normal. Case 1 illustrates correction of bowing by epiphysal growth. Normal length of the femur also was obtained. Correction by growth has been demonstrated even after severe deformity as a result of fracture by some of the authors of this paper, but in these the epiphyses were normal, while in those under discussion there had been apparent destruction. In case 5 the cause was in all probability tuberculosis, which was demonstrated microscopically as an extra-articular lesion, close to but not within the epiphysis. Normal growth after an invasion of an epiphysis by the tubercle bacillus is exceedingly rare. I have often observed a reformation of the neck of the femur after its apparent destruction in the roentgenogram. This has not been observed after total destruction of the epiphysis from a radiographic standpoint. This is partly due to the fact that I have not seen my cases as early after the infection as the authors have, as my cases are largely from rural communities while those of the authors were from Chicago, which made early treatment possible.

DR. J. ALBERT KEY, St. Louis: I think that this paper should be entitled "Survival and Growth of Remnants of Epiphysal Cartilage Plate" rather than regeneration. Bone is destroyed in the presence of an infection, especially a pyogenic infection, while cartilage tends to survive. If that were not true, in pyogenic osteomyelitis the epiphysal line adjacent to the focus in the metastasis would be gone early in the disease and cessation of growth would occur. These roentgenograms show the destruction of bone but they do not give any evidence as to what is happening to the cartilage and it is the cartilage that grows. The cartilage tends to survive because of its lack of circulation and it offers a barrier to the progress of the infection and may derive its nutrition from either side. The younger the patient the more regeneration may be expected. I also want to point out that these are five cases out of a very large number of infections of the hip which have been seen in the University of Chicago Clinic. These are the exception and not the rule.

The epiphysal line is very fickle. Epiphysal fusion and growth disturbance may occur when one least expects it. The epiphysis can be insulted and it may continue to grow, but it must be treated with respect and this must not be taken as evidence that as a rule one is going to get not regeneration but partial survival and continued growth.

DR. WILLIAM N. KRIGSTEN, Chicago: These cases were taken from Dr. Phemister's collection and they do cover a number of years and, as Dr. Key says, they are not the ordinary occurrence. They do happen but not very often and we do not know for sure whether it is entirely regeneration or just repair.

EXPERIMENTAL PERITONITIS: ITS PREVENTION BY ROENTGEN IRRADIATION

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AND

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DETROIT

No postoperative peritonitis occurred in fifty-one consecutive cases of resection for carcinoma of the rectum and rectosigmoid reported by Pratt,¹ of the Henry Ford Hospital, with one exception, when an operative error in the selection of the point of ligation of the vessels resulted in extensive gangrene and sloughing of the colon and in peritonitis. It was noted that all of these patients had received from one month to six weeks preoperatively an erythema dose of high voltage roentgen therapy to each of four ports of the pelvis and the lower portion of the abdomen, primarily for the purpose of decreasing the size of the tumor mass and protecting against metastases. It was estimated that approximately one erythema dose reached the midpelvis. These observations suggested to us that the irradiation may have been responsible at least in part for the protection against peritonitis and stimulated us to investigate the role of roentgen therapy in the prevention of experimental peritonitis in laboratory animals.

At intervals during the past year forty-two full-grown rabbits were given 630 roentgens, approximately 90 per cent of a human erythema dose of x-rays, in a single application over the entire anterior aspect of the abdominal wall. The treatment factors were as follows: voltage 200 kilovolts, rate 25 milliamperes, filter 0.5 mm. of copper with 1 mm. of aluminum, skin target distance 50 cm. and intensity 42 roentgens per minute. All of the animals withstood this treatment with no obvious ill effects other than occasional diarrhea.

With the subject under drop ether anesthesia the abdominal wall and the intraperitoneal fluid were examined before and after the roentgen treatment. Twenty-four and, more noticeably, forty-eight hours after the application of x-rays over the abdomen, the tissues were found to be markedly hyperemic, the vessels being dilated and engorged. The entire thickness of the anterior abdominal wall was two to three times greater than before. This thickening was principally due to edema of the muscle layers, although the edema extended into the subcutaneous and subserosal layers of the abdominal wall as well. Little cellular

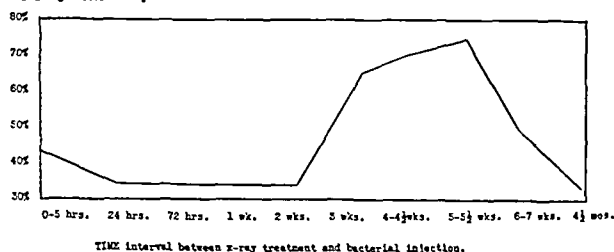
infiltration was seen in the abdominal wall, but occasionally areas of eosinophilic infiltration were noted. The blood vessels were dilated and engorged. With the exception of the marked edema and congestion, there was nothing remarkable in the sections studied.

Fluid was aspirated from the dependent portions of the abdominal cavity of animals treated with x-rays and of controls. In those not treated, the fluid was slightly opalescent, viscid and scanty. Microscopically, numerous granular white blood cells and epithelial cells were seen, but no red cells. In those which were treated with roentgen rays forty-eight hours previously the fluid was increased in amount, pink and more viscid and contained flakes of fibrin. Microscopically, numerous red blood cells were seen, but otherwise the cellular content was very similar to that of the untreated animals.

Four weeks after the roentgen treatment, the anterior abdominal wall had shrunk to approximately normal thickness but the peritoneum appeared more opalescent than normally. The excess in peritoneal fluid had disappeared at this time, and no blood was visible.

At varying intervals after the roentgen therapy, these animals were given a single intraperitoneal injection of 3 cc. of a four to seven day brain broth culture of virulent bacteria. This culture was obtained in a fatal case of peritonitis and it consisted of *Bacillus coli*, aerobic nonhemolytic streptococcus, *Bacillus pyocyaneus*, *Bacterium melaninogenicum*, anaerobic streptococcus, and *Clostridium sporogenes*. Judging from a previous study,² this culture was rather typical of severe acute perforated appendicitis with peritonitis.

Percentage of animals
surviving bacterial injection



Survival rate at various intervals after roentgen therapy.

As can be seen in table 1, the majority of these bacteria when injected in pure culture were capable of producing only minimal or no local lesions and did not cause fatal peritonitis in guinea pigs and rabbits.

On the other hand, a similar injection of a mixed culture of these same bacteria produced subcutaneously extensive areas of cellulitis or gangrene and intraperitoneally overwhelmingly fatal peritonitis. This mixed culture was therefore used because of the synergistic pathogenic action of these bacteria.

A dose of 0.5 cc. of this mixed culture injected intraperitoneally produced death in control rabbits in from twenty-four to forty-eight hours. A dose of 3 cc. produced an overwhelming peritonitis in from twelve to fifteen hours in the control animals.

After intraperitoneal inoculations of 3 cc. of this culture into seventeen rabbits treated from four to seven weeks previously with high voltage roentgen therapy twelve, or 70 per cent, survived, while five died. Of a similar control group not treated by x-rays, all died after the same injection.

Read before the Section on Radiology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Pratt, J. P.: One Stage Operation for Resection of Rectosigmoid and Rectum for Carcinoma (With or Without Hysterectomy), *Am. J. Obst. & Gynec.* 36: 209-218 (Aug.) 1938.

2. Altemeier, William A.: The Bacterial Flora of Acute Perforated Appendicitis with Peritonitis, *Ann. Surg.* 107: 517-527 (April) 1938.

A series of experiments was then carried out to determine the survival rate of animals inoculated at various intervals after the roentgen therapy.

When translated into a curve (as in the accompanying chart) these results showed that a small amount of protection is immediately imparted by irradiation.

TABLE 1.—Pathogenicity of the Bacteria in Pure and Mixed Culture

Bacteria	Results of Injection				
	Pure Culture		Mixed Culture		
	Subcutaneous	Intra-peritoneal	Subcutaneous	Intra-peritoneal	
<i>B. coli</i>	Negative	Negative	Extensive cellulitis in center of which gangrene may occur	Death in 12-15 hr.	
Aerobic streptococcus...	Negative	Negative			
<i>B. pyocyaneus</i>	Cellulitis	Death in 48 hr.			
<i>Bacterium melaninogen-icium</i>	Slight induration	Negative			
Anaerobic coccus.....	Local abscess	Negative			
<i>Clostridium sporogenes</i> .	Slight induration	Negative			

This protection remains at approximately the same level for three weeks, after which the degree of protection rises sharply, reaching its maximum from four to six weeks after the irradiation.

COMMENT

From these experimental results it appears that high voltage roentgen therapy given from four to six weeks before the intraperitoneal injection of virulent bacteria protects from 70 to 75 per cent of the rabbits from experimental peritonitis. The manner in which this protection is brought about is obscure, but a nonspecific type of immunity is apparently produced. It is particularly difficult to understand why irradiation should have any protective action as long as six or seven weeks after its application.

Much work has been done to determine the effect of x-rays on resistance to infection in experimental animals. Among early investigators who studied the effect on antibody formation are Benjamin and Sluka,³ Låwen³ and Simonds and Jones.⁴ Later several articles appeared on the same subject by Chovey,⁵ Corper⁶ and particularly Hektoen.⁷ The results obtained by these workers were discordant in many particulars, but they agreed on these points: that (1) under certain conditions antibody formation may be reduced, restrained or inhibited by irradiation and (2) if antibody formation is well under way, nothing but massive doses can influence it.

The effect of roentgen treatment on the susceptibility of animals to infection has also been investigated. Kessel and Sittenfeld⁸ found that guinea pigs infected

with tubercle bacilli and treated with x-rays lived fourteen days longer than controls. Kellert,⁹ using the same kind of animals and organisms, found no increased susceptibility to tuberculosis but increased susceptibility to secondary invaders. Kellert was unable to confirm the observations of Morton,¹⁰ who found that massive doses of x-rays shortened the lives of guinea pigs after infection with tubercle bacilli. The work of many others could be cited, but the results of most indicate that no degree of immunity to tuberculosis is conferred but that susceptibility to secondary invaders may result.

Chrom¹¹ studied the effect of roentgen irradiation on experimental bacteremia. Using doses of from 430 to 800 roentgens on mice, he measured the length of time required for these animals to free their blood stream from organisms as compared with controls. In no instance were the irradiated animals able to free the blood stream from organisms more quickly.

After small doses (from 10 to 75 roentgens) over the liver and spleen, Chrom¹² injected bacteria of known pathogenicity into the blood stream. Studying the blood at intervals, he found no evidence of increased resistance as measured by the ability of the irradiated animals to free their blood stream of organisms more quickly than controls.

After recognition of the role of the reticulo-endothelial system in immunity, curiosity was aroused as to what effect x-rays had on this system. The rate of elimination of vital stains from the blood stream has been used to measure the functional efficiency of this system. Pohle and Davy¹³ noted slight increase in the rate of elimination of the dye from the blood stream in each instance when rabbits, treated over the spleen or entire body, were given injections of trypan

TABLE 2.—Result of Intraperitoneal Injection at Varying Intervals After High Voltage Roentgen Therapy

No. of Rabbits	Interval Between Roentgen Therapy and Bacterial Injection	Result, Inoculated Rabbits	Percent- age of Animals Surviving	Result, Controls
7	0 (immediate)	3 survived 4 dead	43	All 6 dead
3	24 hours	1 survived 2 dead	33	All 3 dead
3	72 hours	1 survived 2 dead	33	All 3 dead
3	1 week	1 survived 2 dead	33	All 3 dead
3	2 weeks	1 survived 2 dead	33	All 3 dead
3	3 weeks	2 survived 1 dead	66	All 3 dead
7	4-4½ weeks	5 survived 2 dead	71	All 7 dead
8	5-5½ weeks	6 survived 2 dead	75	All 5 dead
2	6-7 weeks	1 survived 1 dead	50	Both dead
3	4½ months	1 survived 2 dead	33	All 3 dead

blue one hour later. Mischtschenko¹⁴ determined that 100 per cent of an erythema dose given one hour before injection delayed the absorption of trypan blue from

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7. Hektoen, Ludwig: The Influence of the X-Ray on the Production of Antibodies, *J. Infect. Dis.* 17: 415-422, 1915; Further Studies on the Effects of the Roentgen Ray on Antibody Production, *J. Infect. Dis.* 22: 28-33 (Jan.) 1918. Hektoen, Ludwig, and Corper, H. J.: Effect of Injection of Active Deposit of Radium Emanation on Rabbits with Especial Reference to Leukocytes and Antibody Formation, *J. Infect. Dis.* 31: 305-315 (Oct.) 1922.

8. Kessel, L., and Sittenfeld, M. J.: The Effect of Penetrating Rays upon Experimental Tuberculosis, *Proc. New York Path. Soc.* 14: 190-193, 1914-1915.

9. Kellert, Ellis: On the Increased Susceptibility of X-Rayed Guinea-Pigs to Inoculation with Tubercle Bacilli, *J. M. Research* 39: 93-101 (Sept.) 1918.

10. Morton, John J.: A Rapid Method for the Diagnosis of Renal Tuberculosis by the Use of the X-Rayed Guinea Pig, *J. Exper. Med.* 24: 419-427 (Oct.) 1916.

11. Chrom, S. A.: Studies on the Effect of Roentgen Rays upon the Intestinal Epithelium and upon the Reticulo-Endothelial Cells of the Liver and Spleen, *Acta radiol.* 16: 641-660, 1935.

12. Chrom, S. A.: Studies on Irradiation of the Reticulo-Endothelial Tissue with Small Doses of Roentgen Rays, *Acta radiol.* 18: 715-721, 1937.

13. Pohle, E. A.: The Effect of Roentgen Rays on the Reticulo-Endothelial System, *Am. J. Roentgenol.* 22: 439-447 (Nov.) 1929.

14. Mischtschenko, J. P.: Versuchsergebnisse bezüglich des Einflusses der Röntgenstrahlen auf die Funktionen des reticulo-endothelialen Systems, *Strahlentherapie* 32: 154-162, 1929.

the blood stream. Pohle and Davy called attention to the marked variation in the rate of elimination of vital stains in control animals.

Kelly¹⁵ has successfully treated a variety of infections with x-rays. In addition he has been able to prevent gas bacillus infections in crushing or compound fracture wounds by prophylactic roentgen therapy.

It must be remembered, however, that the earlier workers used low voltage and intensity, little or no filtration, irradiation of the entire body surface and unmeasured doses. On the other hand, we used 200 kilovolts, moderately heavy filtration, irradiation of the abdomen only, relatively large known doses (630 roentgens or more) with 42 roentgens intensity a minute, and longer irradiation-injection intervals.

SUMMARY

A group of forty-two rabbits treated with approximately 90 per cent of an erythema dose was inoculated intraperitoneally with equal amounts of mixed highly virulent bacterial cultures. It was found that the degree of protection of the treated animals rose sharply three weeks after irradiation and reached its maximum between the fourth and the sixth week. A study of our experiments and a review of the literature have failed to explain the manner in which this protection is brought about.

In the clinical series of patients with carcinoma of the rectum or rectosigmoid reported by Pratt, an interval of from four to six weeks elapsed between the time of roentgen therapy and operation. This was the period of time arbitrarily chosen as necessary to allow the patient to recover sufficiently from any deleterious effects of the x-rays. On the basis of our experimental work, this interval seems to have been wisely chosen since it also confers the highest degree of protection from peritonitis.

SUMMARY AND CONCLUSIONS

High voltage roentgen irradiation is valuable as an immunizing agent against experimental peritonitis in animals.

Furthermore, our observations suggest that preoperative irradiation is valuable in preventing postoperative peritonitis in human beings.

The dosage employed was 90 per cent of a human erythema dose.

The maximum degree of immunity in animals occurred from four to six weeks after the irradiation.

The manner in which this protective action is brought about is unexplained.

The experimental results presented in this paper further justify the continuation of preoperative roentgen irradiation in contemplated resections of the colon and rectum.

ABSTRACT OF DISCUSSION.

DR. J. P. PRATT, Detroit: Many surgeons have condemned the use of preoperative roentgen therapy for malignant conditions of the pelvic organs. The reason usually stated is that the hazard of operation is increased by this procedure. My own experience is that the risks of operation are reduced. An explanation for the difference of opinion may be found in the time allowed to elapse between irradiation and operation. The difficulty and risk are increased if the operation is performed within a few days after the roentgen treatment. Waiting from four to six weeks changes the risk to protection. The authors stated that they decided on the time interval between irradiation and operation in each case. Patients were carefully observed after irradiation. There is a temporary depression of vitality, reaching the

maximum on the final day of radiotherapy. Subsequently, the physical condition improves for a period of a few weeks. The appetite is better, nutrition is improved and a gain in weight is noted. The red cell count and the hemoglobin content increase. Fatigue and lassitude become less apparent. The general vigor increases. Unless the temporary improvement is anticipated and the patients are warned against a false sense of security, they may refuse operation, believing that they are already cured. Daily examinations after irradiation show an immediate swelling, edema and increased tenderness of the tissues treated. These conditions gradually subside, approaching a normal state. Judgment of the optimum time for operation is based, therefore, on two conditions: (1) the general condition of the patient and (2) the state of the local tissues. The choice of time for operation varies for individual patients but usually it has been from four to six weeks after irradiation. From the data presented, indicating that irradiation protects the peritoneum of animals against infection, it may be inferred that an analogous safeguard to operation has been provided during the four to six week interval. No satisfactory method of measuring this protection in patients is apparent, but the fact that evidence of postoperative peritonitis was not observed in the series of resections of the rectosigmoid would confirm the validity of the inference. Peritonitis was inevitable in one case in which an error in judgment led to sloughing of the bowel on account of inadequate circulation. After the affected loop of bowel is excised and the cut ends are anastomosed, the repaired bowel is returned to the pelvic cavity. Some soiling inevitably occurs. While the path of least resistance to drainage is through the posterior incision, soiling within the pelvic cavity undoubtedly occurs at the time of operation as well as subsequently. Failure of peritonitis to develop may be explained by the protection of the peritoneum through irradiation or the absence of potent organisms.

THE PRESENT STATUS OF LIPOCAIC

LESTER R. DRAGSTEDT, PH.D., M.D.

CHICAGO

The probability that the pancreas furnishes more than one internal secretion to the organism was suggested by the discovery of more than one type of cell in the islets of Langerhans. The evidence that insulin is elaborated by the beta cells of the islets is now fairly conclusive. The function of the alpha cells remains unknown. In 1924 Fisher¹ and Allan, Bowie, Macleod and Robinson² demonstrated that completely depancreatized dogs could not be maintained alive for long even though adequately treated with insulin. At death the most obvious change observed was an extensive fatty infiltration and degeneration in the liver. In one experiment, however, Fisher noted an extreme degree of arteriosclerosis of the aorta. The addition of raw pancreas to the diet was found by Macleod and his associates to prevent the development of these changes in the liver and to permit survival for long periods of time. These observations have been abundantly confirmed.

In 1930 Hershey³ and in 1931 Hershey and Soskin⁴ reported that the addition of 10 Gm. of lecithin daily

From the Department of Surgery of the University of Chicago.

Read before the Section on Pharmacology and Therapeutics at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

These studies represent the combined work of a number of associates, including John Van Prohaska, H. P. Harms, W. A. Geer, W. C. Goodpasture, P. B. Donovan, C. W. Vermeulen and D. E. Clark.

This work has been aided by grants from the Josiah Macy Jr. Foundation, the Committee on Research in Endocrinology of the National Research Council, the Douglas Smith Foundation for Medical Research of the University of Chicago, and Eli Lilly & Co.

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to the diet of the depancreatized dog treated with insulin was also effective in preventing damage to the liver and in permitting survival. The active constituent of lecithin in this effect was found by Best and Huntsman⁵ in 1932 and by Best, Ferguson and Hershey⁶ in 1933 to be choline. Raw pancreas contains both choline and the various enzymes present in pancreatic juice, and its beneficial effect in preserving the life of the depancreatized dog and in preventing the extreme accumulation of fat in the liver was attributed to one or the other of these substances. In 1936 Dragstedt, Van Prohaska and Harms⁷ presented evidence indicating that the effect of the feeding of pancreas in this connection could not be accounted for on the basis of its content of choline or pancreatic enzymes but on the other hand was due to the presence of a new and

fact that the adequate administration of insulin does not permit these animals to survive for long suggests that pancreatic juice may also be essential. Experimental studies⁷ have, however, demonstrated that the oral administration of fresh active pancreatic juice, together with insulin therapy, does not prolong life or prevent the characteristic fatty changes in the liver, although the digestion and absorption of food are much improved. This finding indicates that the beneficial result obtained by feeding raw pancreas cannot be accounted for on the basis of its content of pancreatic enzymes. The evidence, which indicates that the choline or lecithin in pancreas also cannot account for its effect, may be stated as follows:

1. It requires approximately 2 Gm. of choline a day over and above that present in the diet to exert this beneficial effect, whereas 100 Gm. of pancreas, which is an effective dose, contains only about 250 mg. of choline.⁸

2. The effect of the feeding of pancreas is specific. Liver and brain, which contain as much or more lecithin and choline, exert no beneficial effect.⁷

3. When extracts of pancreas are made, the active substance appears in the fat-free alcohol extract, whereas the ether soluble fractions, which contain practically all the lecithin of the pancreas and accordingly almost all the choline, are inert.⁷

4. It has been possible to secure an extract from pancreas which exerts the typical effect of the gland in a daily dose of from 60 to 100 mg. of dried substance. This material is free of fat and contains not more than from 1 to 2 per cent of free choline. It is effective both on oral and on subcutaneous administration. The details of the preparation of this extract have been reported elsewhere.⁹

The evidence outlined seems sufficient to warrant the conclusion that the active substance in pancreas is other than choline and that it is specific and probably effective in small amount. It is likely that our most potent extracts are still crude and contain much inert material. Since this substance corrects a specific defect in the animal whose pancreas has been removed, and since it is not present in the external secretion of the gland, the conclusion seems reasonable that it represents a specific internal secretion or hormone distinct from insulin.

The function of this hormone is still, however, but little understood. What little is known may perhaps best be brought into view by recounting the sequence of events which follow when the pancreas in the dog is completely removed. An immediate hyperglycemia and glycosuria develop, the animal becomes rapidly emaciated and death occurs from so-called pancreatic diabetes in from one to four weeks. A marked accumulation of fat in the liver occurs during the first two or three days after the operation. This is particularly striking in fat dogs, and such animals usually display a marked lipemia and acidosis. These abnormalities are probably to be attributed to the lack of insulin. If the depancreatized dog is placed on a standard mixed diet of protein, carbohydrate and fat, given active pancreatic juice by mouth and sufficient insulin (usually from 15 to 20 units) to limit the excretion of urinary sugar to 10 Gm. a day, life is considerably prolonged and the defect due to the absence of lipocaic made manifest. The early accumulation of fat in the liver disappears,

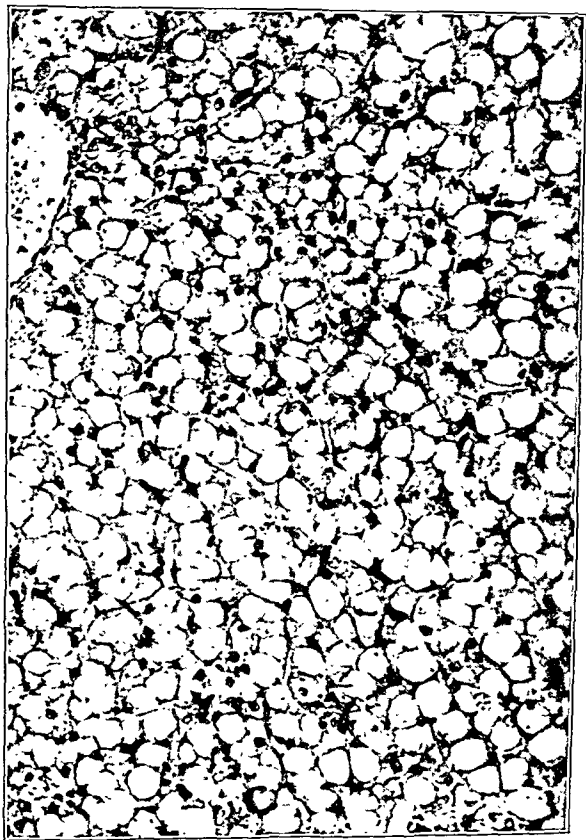


Fig. 1.—Biopsy specimen showing fatty metamorphosis of the liver in a dog two months after complete pancreatectomy.

hitherto undescribed internal secretion, manufactured by the pancreas and effective on oral administration. The name lipocaic was suggested for this substance as having to do in a general way with the utilization of fat.

During the three years since our initial report, a considerable amount of work has been carried on in this laboratory with the aid of a number of associates, the result of which has been to confirm and extend the original conclusions. It may therefore be helpful to summarize the evidence at present available which indicates that lipocaic is a specific pancreatic hormone.

The depancreatized animal clearly suffers from two known deficiencies, insulin and pancreatic juice. The

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acidosis is relieved and the blood fats return to about the normal concentration. However, as time goes on, there occurs a steadily lessening excretion of dextrose, in spite of continually decreasing doses of insulin, until after from six to eight weeks the animal may excrete only a gram or two of dextrose a day and receive

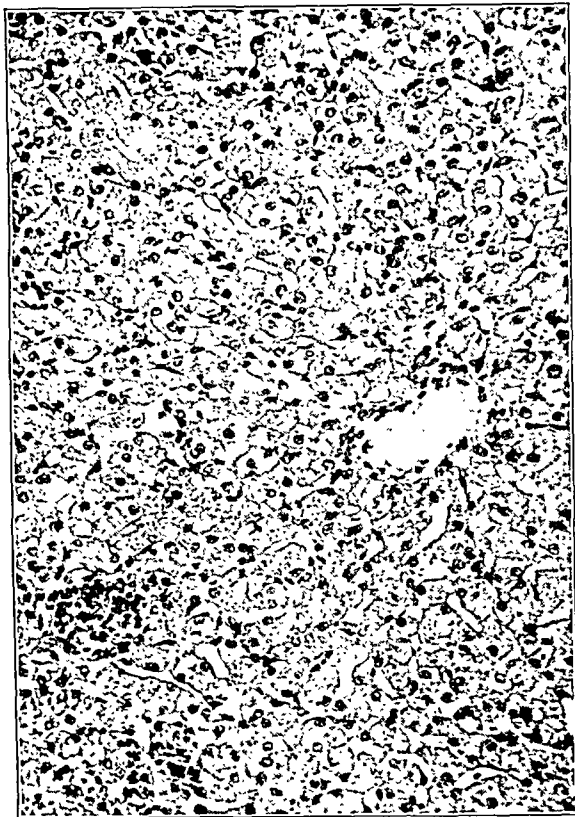


Fig. 2.—Biopsy specimen showing disappearance of fat and return of normal structure after the oral administration of lipocaic for twenty-six days.

only from 2 to 3 units of insulin. Larger amounts of insulin, even 5 units, may at this time provoke fatal hypoglycemic convulsions. This marked insulin sensitivity is a characteristic sign of the fatty liver of lipocaic deficiency. Impairment of liver function is revealed by the bromsulphalein test.¹⁰ The concentration of blood lipids is reduced to about one half the normal value. Progressive weakness and loss of appetite develop, the animal becomes emaciated, treatment with insulin becomes more and more difficult and death occurs. At autopsy the liver is found to be enlarged to three or four times its normal size and so infiltrated with fat that the normal architecture is entirely obscured (fig. 1). Of 154 depancreatized dogs whose course was carefully studied in our laboratory, these fatty changes failed to develop in only thirteen. Both regular and protamine zinc insulin have been used in this work, but no significant differences have been observed.

If lipocaic is given to such a depancreatized animal at the time when the excretion of sugar has become minimal and the insulin requirement reduced to less than 5 units a day, a striking change is produced. An immediate and large excretion of dextrose in the urine occurs and the insulin dosage may be raised to 20 or 25 units a day without harm. The blood lipids promptly rise to the normal level or even higher, and liver function

tests reveal improvement in bromsulphalein excretion. Biopsies of the liver during this period disclose a rapid disappearance of the fat and a return of the normal structure (figs. 1 and 2).

The large dextrose excretion and increased tolerance to insulin suggest that under the influence of lipocaic the fat in the liver is being converted into dextrose. The possibility of such conversion in the organism has long been recognized for the glycerin part of the fat molecule but denied for the fatty acid. The large amounts of dextrose made available in these experiments, however, seem to demand such a conversion for the fatty acid.

The clinical application of these studies on the lower animal may prove to be of great interest. Enlargement of the liver due to extensive fatty infiltration is not uncommon in human diabetes mellitus, particularly in children. Joslin and his associates in this country have repeatedly called attention to this complication. In this connection it is important to recognize, as already noted, that two entirely distinct forms of fatty liver are seen in depancreatized dogs, one developing immediately after operation in well nourished animals that receive insufficient amounts of insulin and a second more serious variety, which appears later in spite of adequate insulin therapy and is due to lipocaic deficiency. The former type is characterized by the presence of hyperlipemia and acidosis, normal liver function and tolerance to relatively large doses of insulin. In these cases better control of the diabetes by more adequate administration of insulin relieves the abnormalities. The second variety is characterized by hypolipemia, impaired liver function, diminished excretion of dextrose and marked sensitivity to even small doses of insulin. The administration of insulin has no effect on the fat in the liver and may produce fatal hypoglycemia. This type is specifically relieved by lipocaic. There already is evidence that these two types of fatty metamorphosis of the liver are seen



Fig. 3.—Specimen showing arteriosclerosis of the aorta in a dog nine months after complete pancreatectomy. Note the thickening of the intima, the disruption of the media, and the deposition of amorphous lipid and calcareous material in the media and in the subendothelial layers.

in human diabetes, the former illustrated in the reports of Marble, White, Bogan and Smith¹¹ and the latter in the paper of Grayzel and Radwin.¹² The latter authors treated three young diabetic patients who had hepatomegaly by means of lipocaic and secured a strik-

10. Goodpasture, W. C.; Vermeulen, C. W.; Donovan, P. B., and Dragstedt, L. R.: *Am. J. Physiol.* 124: 642 (Dec.) 1938.

11. Marble, Alexander; White, Priscilla; Bogan, Isabel, and Smith, Rachel: Enlargement of the Liver in Diabetic Children, *Arch. Int. Med.* 62: 740 (Nov.) 1938.

12. Grayzel, H. C., and Radwin, L. S.: Hepatomegaly in Juvenile Diabetes Mellitus Treated with Pancreatic Extract, *Am. J. Dis. Child.* 56: 22 (July) 1938.

ing recession of the liver to its normal size. The hepatomegaly returned when the lipocaic was discontinued and again receded when lipocaic was resumed. The diabetes in these cases had been well controlled by diet and insulin. Rosenberg¹³ reported a case of hepatomegaly and impaired liver function in an adult who had mild diabetes which did not improve with better control of the diabetes with diet and insulin. A biopsy of the liver secured at operation revealed fatty metamorphosis similar to that seen in the depancreatized dog. The administration of lipocaic brought about improvement in liver function, recession in the size of the liver and disappearance of fat, as revealed by a second biopsy.

There is considerable evidence at present that the patient with diabetes mellitus is not returned to an entirely normal state by the administration of insulin. In particular he seems to suffer from a lessened capacity to utilize fats, and many students of this disease have advocated a low fat, high carbohydrate diet with insulin in treatment. In this connection it may be significant that symptoms of lipocaic deficiency in depancreatized dogs may be mild or entirely absent on low fat diets, only to become manifest when liberal amounts of fat are fed. It seems definitely established that the diabetic patient, whether adequately treated or not, is much more liable to the development of presenile atheromatosis and arteriosclerosis than is the normal individual. In his characteristically striking way Joslin states that the diabetic patient who in the preinsulin era used to die from acidosis now dies from coronary disease or diabetic gangrene. Does this mean that many diabetic patients suffer not only from an insulin deficiency but also from a deficiency of lipocaic, which manifests itself in a disturbance in fat utilization, with deposition of fat in the liver and in the more chronic cases in the subendothelial layers of the arteries? In partial answer to this query, I may state that we have recently reported the development of typical atheromatosis and arteriosclerosis in six depancreatized dogs maintained in our laboratory from six to nine months¹⁴ (fig. 3). In these animals the diabetes was well controlled with insulin but the fatty livers of lipocaic deficiency were repeatedly permitted to develop in the course of our assay studies. Since spontaneous arteriosclerosis of this degree in the domestic dog is exceedingly rare, the observations here seem significant. The belief of some students¹⁵ of the disease that the incidence of presenile arteriosclerosis in cases of diabetes is especially high when diets rich in fat are fed is also in harmony with this view.

CONCLUSIONS

1. The demonstration that lipocaic is an internal secretion of the pancreas depends on the recognition that the depancreatized dog, fed on a mixed diet of protein, carbohydrate and fat, is not restored to a normal state by the adequate administration of insulin and pancreatic juice and that the remaining deficiency is corrected by the oral administration of the pancreas but not by other organs.

2. Extracts of pancreas have been prepared which are effective on oral and subcutaneous administration in daily doses of from 60 to 100 mg. of dried substance. Since these extracts are practically free from lecithin

and choline, the former conclusion that the beneficial effect of pancreas feeding in depancreatized dogs cannot be accounted for on the basis of its content of these chemicals is confirmed.

3. Two types of fatty infiltration of the liver occur in both diabetes mellitus and pancreatic diabetes. One type is due to poor control of the diabetes by inadequate administration of insulin and is characterized by a normal or high concentration of the blood lipids and acidosis and is relieved by better insulin therapy. The second type is due to lipocaic deficiency and is characterized by a low concentration of the blood lipids, impaired liver function, decreased dextrose excretion and insulin sensitivity and is relieved by lipocaic therapy but not by insulin.

4. The occurrence of arteriosclerosis in depancreatized dogs is of greater incidence than normal for this species. There is a possible relation of lipocaic to this complication in both pancreatic diabetes and diabetes mellitus.

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ABSTRACT OF DISCUSSION

DR. DAVID H. ROSENBERG, Chicago: I wish to present some therapeutic effects observed in a case of marked fatty metamorphosis of the liver associated with diabetes mellitus. The patient's liver was 10 cm. below the costal margin on inspiration. An intravenous dextrose tolerance test was abnormal. The hippuric acid test revealed an excretion of 49 per cent in four hours. The bromsulphalein test showed 20 per cent retention at the end of thirty minutes. Laparotomy was done for the removal of an enlarged right ovary, at which time the liver was found enlarged, grossly fatty and yellowish. A section was removed for biopsy. The patient was observed for a control period of 138 days, during which time no subjective or objective improvements were observed. At the end of this period, the dextrose tolerance test was still abnormal and the bromsulphalein retention remained unaltered. Lipocaic therapy was then instituted, the patient receiving 5 Gm. a day by mouth. In six weeks a progressive diminution in the size of the liver was first noted, and in eleven weeks the edge of the liver was 1.5 cm. below the costal margin on inspiration. The consistency appeared normal, and tenderness had completely disappeared. The hippuric acid test returned to normal, as did the bromsulphalein retention. At this time the patient had a series of recurrent attacks of biliary colic accompanied by the development of hydrops of the gallbladder, for which she was readmitted to the hospital. At operation the liver was normal in size, color and consistency. A biopsy was again taken. The dextrose tolerance test during the postoperative period showed a normal response. The blood cholesterol, which before and during the control period was normal, had risen to 348 mg. per hundred cubic centimeters. During the postoperative period, at which time lipocaic therapy was temporarily discontinued, the cholesterol level began to drop, and when lipocaic was again exhibited it rose to its former level. Histologic examination of the first section revealed marked fatty infiltration and degeneration of the liver, characterized by swelling of the liver cells, filling of the cytoplasm with larger and smaller droplets of fat and displacement of the nuclei to the periphery, presenting thereby a signet ring appearance. The remaining liver cords, which were more intact, showed coarse granulation and swelling. Under higher magnification these changes were even more clearly evident. After lipocaic therapy, a striking change in the architectural appearance was readily seen. A marked disappearance of the fat globules was apparent, although the remaining cells still showed some granular degeneration and some swelling. This was more clearly evident from the higher magnification. During the period of lipocaic therapy, subjective improvement in the symptoms was also noted. I have observed, therefore, the clinical counterpart of the experimental observations recorded by Dr. Dragstedt.

13. Rosenberg, D. H.: *Am. J. Digest. Dis.* 5: 607 (Nov.) 1938.

14. Dragstedt, L. R.; Goodpasture, W. C.; Vermeulen, C. W., and Clark, D. E.: *Proc. Am. Physiol. Soc.*, April 26, 1939, p. 63.

15. Joslin, E. P.: *The Treatment of Diabetes Mellitus*, Philadelphia, Lea & Febiger, 1935, p. 328.

Clinical Notes, Suggestions and New Instruments

NECROSIS OF THE ANTERIOR PITUITARY FOLLOWING PARTURITION

H. C. GOTSHALK, M.D., AND I. L. TILDEN, M.D., HONOLULU, HAWAII

Sheehan¹ in 1937 reported twelve cases of necrosis of the anterior lobe of the pituitary occurring in a consecutive fatal series of seventy-six women, seventeen of whom died in late pregnancy or at delivery and fifty-nine during the puerperium. He was able to collect from the literature thirty-six additional cases of pituitary necrosis following delivery. Of these forty-eight cases, twenty-seven were recent and twenty-one healed lesions of the pituitary.

Sheehan, from a study of these cases, states that necrosis of the anterior pituitary is a relatively frequent finding in women dying during the puerperium. According to this author, the necrosis begins about the time of delivery and is due to thrombosis of the pituitary vessels. This often follows symptoms of collapse when the latter is due to hemorrhage.

If the patient survives this pituitary necrosis in the puerperium she often develops symptoms of pituitary insufficiency ranging from Simmond's disease to milder forms of pituitary dysfunction. Sheehan and Murdoch,² in a follow-up of 128 patients who had had various degrees of hemorrhage at delivery some years previously, found symptoms suggesting pituitary insufficiency dating from delivery in forty-one. It was concluded that the symptoms in these cases were due to healed postpartum necroses of the anterior lobe of the pituitary.

The present case falls clearly into the group with recent necrosis of the pituitary gland and presents several features of interest not previously described. It is accordingly thought to be worthy of presentation.

REPORT OF CASE³

History.—Mrs. C. A., aged 26, Caucasian-Hawaiian, primipara, secundigravida, entered the Queen's Hospital Feb. 8, 1939, at 1 a. m. in active labor. Her pains started three hours prior to admission. One previous pregnancy in 1937 terminated in a spontaneous abortion at the sixth month. Her past history was otherwise irrelevant.

Examination at the time of admission revealed a well developed, somewhat obese, young woman in active labor. The heart was normal. The blood pressure taken while she was resting quietly was 160 systolic, 118 diastolic. Urine examination was negative and the Wassermann and Kahn reactions were negative. The pelvic measurements were normal, vertex presenting, right occipito-anterior position. The cervix was 2 cm. dilated.

The uterine contractions were good but the cervix was slow in dilating. The membranes were ruptured at 11:30 p. m. of the day of admission and the cervix was completely dilated one hour later, the total duration of the first stage of labor being twenty-six and one-half hours. At 1:20 a. m., February 9, a normal 7 pound 13 ounce (3,544 Gm.) boy was delivered spontaneously, the patient sustaining a second degree perineal laceration, which was repaired at once. The placenta and membranes were expressed intact six minutes later. A 1 cc. ampule of solution of posterior pituitary (1 cc.) and 1 cc. of a proprietary uterine stimulant were given following delivery of the placenta but for five minutes the uterus failed to contract and considerable hemorrhage occurred. The fundus finally contracted following massage and the administration of a second ampule of solution of posterior pituitary and the proprietary, and the patient was put to bed at 1:45 a. m. with the pulse 88 and the blood pressure 110/84. The estimated loss of blood during delivery was from 600 to 800 cc. and the total duration of labor was twenty-seven and one-half hours.

Four and one-half hours later the patient had saturated several pads and her pulse had risen to 124. The blood

pressure had dropped to 92/55. Her uterus was atonic to palpation and an additional ampule of solution of posterior pituitary was given immediately. Examination showed a three-fourths inch cervical tear but the hemorrhage appeared to be coming from the uterus. The blood pressure dropped still further to 70/30. The patient became dyspneic and restless and the pulse became imperceptible. Ephedrine and carbon dioxide and oxygen were administered and intravenous dextrose (10 per cent in Hartman's solution) was started. A transfusion of 500 cc. of citrated blood was given at 9:25 a. m. A second transfusion of 575 cc. of citrated blood was given an hour later, following which the patient's pulse filled out and slowed down to 114. She appeared to be in good condition and stated that she "felt like a million dollars." Prior to the first transfusion the patient had a hemoglobin of 65 per cent and a red cell count of 3,900,000. Nevertheless, because of the symptoms, it was thought that she was suffering from acute loss of blood. Three hours later she lost an additional estimated 500 cc. of blood and a third transfusion, 250 cc., was given.

During the afternoon she again went into a condition of shock with rapid pulse and increasing dyspnea. A second blood count showed 4,230,000 red cells with 75 per cent hemoglobin. Although there had been no further loss of blood, a fourth transfusion of 300 cc. of citrated blood was given that evening.



Fig. 1.—Section under low power showing (1) the small zone of normal tissue and (2) the necrotic area involving the greater part of the anterior lobe.

Her blood pressure remained low, 80/55. She dozed at intervals during the night but was restless in her sleep and her pulse remained weak, rapid and irregular. Her abdomen became somewhat distended. The red cell count early the next morning was 4,230,000, with 75 per cent hemoglobin.

At 3 p. m. that afternoon (February 10) she became irrational and the pulse imperceptible. Cyanosis developed and her abdomen became more distended. That evening generalized clonic spasms set in with twitching of the left arm and the muscles of the forehead. Her temperature rose from 101 to 103 F. and she ceased breathing at 7:25 p. m., ninety-four hours following the onset of labor pains and sixty-seven hours after delivery.

Postmortem Examination.—An autopsy was done immediately after death, before the onset of rigor mortis. The pupils were dilated and equal. The breasts were large and the abdomen was distended. The abdominal fat measured 3 cm. in thickness.

Both pleural cavities were free of fluid and no adhesions were present about either lung. Both lower pulmonary lobes were partially collapsed but no obstruction could be demonstrated in the trachea or main bronchi. The lungs on sectioning presented a dry surface with marginal atelectasis of the lower lobes.

The pulmonary artery and its main branches were free of emboli. The pericardial sac contained an average amount of clear fluid. The heart was average in size, the wall of the

From the Department of Pathology, the Queen's Hospital.

1. Sheehan, H. L.: Postpartum Necrosis of the Anterior Pituitary, *J. Path. & Bact.* 45: 189-214 (July) 1937.

2. De Lee, Joseph B., and Greenhill, J. P.: Year Book of Obstetrics and Gynecology, Chicago, Year Book Publishers, 1938.

3. This case is reported by the courtesy of Dr. A. E. Duryea.

left ventricle measuring 1.5 cm. in thickness. The muscle was firm and reddish brown. The valves were all normal in appearance and the coronaries were open.

No free fluid was found in the peritoneal cavity. The liver was on a level with the right costal margin. Both diaphragms were pushed upward by the distended bowel, the right to the level of the third interspace and the left to the fourth rib. The fundus of the uterus was on a level with the umbilicus.

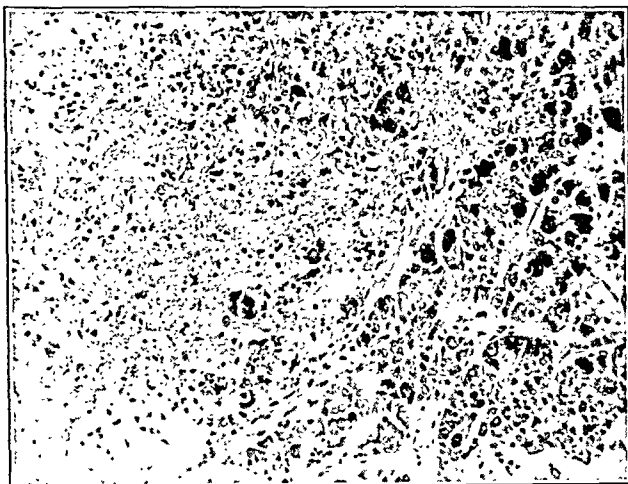


Fig. 2.—Section under medium power showing the junction between the zone of normal and necrotic tissue.

The liver and kidneys were average in size and showed no recognizable gross pathologic change other than cloudy swelling. The pancreas, spleen and adrenals were normal in appearance.

The stomach and bowel were distended by gas and contained a moderate amount of semiliquid, yellow green material. The mucous membrane was pale and no ulceration or other lesion could be found.

The wall of the uterus measured 3.5 cm. in thickness. The endometrium was ragged and hemorrhagic but there was no gross evidence of infection. No retained placental tissue could be found. Two small lateral cervical tears were present, each measuring 1.5 cm. in length. The uterine and ovarian veins were thin walled and normal in appearance. The iliac veins showed no evidence of thrombophlebitis. Both tubes and ovaries were average in size and showed no gross abnormality. In general, the appearance was that of a normal postpartum uterus.

The brain, on sectioning, presented no gross evidence of hemorrhage or softening. The ventricles were of normal size and contained an average amount of clear spinal fluid.

Examination of the pituitary revealed a spherical nodule slightly less than 1 cm. in diameter, bulging through the diaphragma sellae and impinging on the infundibulum. There was no apparent pressure on the optic chiasm. The gland was carefully dissected free and when removed weighed 1.5 Gm. It was soft to the touch and appeared swollen and edematous. After fixation in 10 per cent solution of formaldehyde a lateral section was made through the anterior lobe and the attached, overlying nodule (fig. 1). This disclosed two zones, a small superficial dark zone at the periphery of the nodule and a large pale zone involving the remainder of the gland. The sella turcica was average in size.

Microscopic study of sections taken through the heart muscle, liver and kidneys revealed no pathologic change except moderate parenchymatous degeneration. No abnormality was found in the lungs, spleen, pancreas or adrenals. No signs of inflammation could be found in the wall of the uterus.

Examination of sections taken through the anterior lobe of the pituitary revealed an interesting and striking picture. The superficial dark zone was made up of normal appearing glandular tissue in which both chromophobe and chromophil cells could easily be distinguished. This was limited to the peripheral portion of the nodule, which was bulging through the sella. The remainder of the anterior lobe showed early but unmistakable and widespread necrosis. The transition between the

two zones was rather sharp (fig. 2). In most areas the cell outlines were preserved but the cells were swollen and granular, often broken up with disappearance of the nuclei. In several regions there was complete loss of structure with replacement by debris. Red blood cells, many of them broken down, were scattered everywhere and widespread deposition of hemosiderin was present both within and without the skeleton remains of the glandular alveoli. Polymorphonuclear cell infiltration formed a prominent part of the picture (fig. 3). These cells were most numerous in the more badly necrosed areas but were also found in generous numbers in all parts of the gland. Although numerous sections were carefully examined, no thrombosis of the vessels could be found. A number of the endothelial spaces were collapsed; most of them contained broken down red cells. The picture, in brief, was one of early necrosis of the greater part of the anterior lobe of the pituitary.

COMMENT

In studying the facts of this case, a number of points seem important:

1. During delivery a moderate amount of blood was lost (from 500 to 800 cc.). Four hours later the patient had a severe hemorrhage with atonia of the uterus and collapse, for which 1,625 cc. of citrated blood was given in four transfusions.
2. Her red cell count taken just before death was 4,300,000, with 75 per cent hemoglobin.
3. The patient's blood pressure while resting was 160/118. Immediately following delivery it fell to 110/84 and for a long time remained as low as 70/30.

4. The only significant finding at autopsy was marked hyperplasia of the anterior pituitary with widespread necrosis of the greater portion of this structure and no evidence of thrombosis. The gland weighed 1.5 Gm.

The pituitary gland has a very rich blood supply, which is brought in by numerous small branches of the circle of Willis.⁴ These run in the pia mater of the infundibulum and thus gain access to the gland. Here they break up into small sinuses, which are devoid of muscle fibers and lined only by endothelial cells. The outgoing blood drains into the circular sinus. This vascular structure facilitates the exchange of fluids and secretory products of the cells.

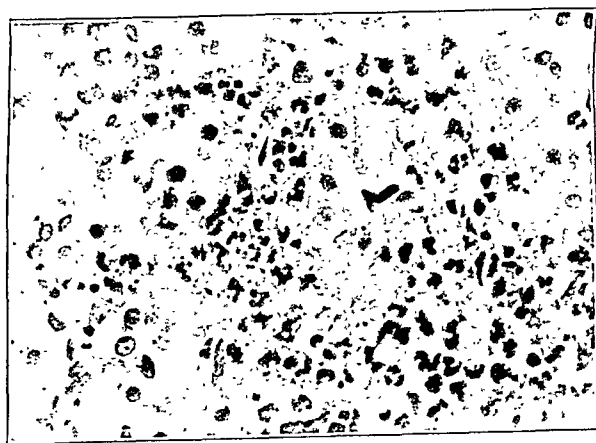


Fig. 3.—Section under high power showing polymorphonuclear cell infiltration.

It is well established that there is marked enlargement of the pituitary gland during pregnancy, which reaches its maximum at the time of delivery.⁵ There is a corresponding increase in the vascularity of the gland.

An excessively enlarged pituitary gland confined within a rigid space, such as the sella turcica, would exert a definite pressure on this structure and probably suffer some degree

4. Maximow, Alexander A., and Bloom, William: *A Text-Book of Histology*, Philadelphia, W. B. Saunders Company, 1930.
5. Curtis, Arthur Hale: *Textbook of Gynecology*, ed. 2, Philadelphia, W. B. Saunders Company, 1936. Mazer, Charles, and Goldstein, Leopold: *Clinical Endocrinology of the Female*, Philadelphia, W. B. Saunders Company, 1932. Wolf, William: *Endocrinology in Modern Practice*, Philadelphia, W. B. Saunders Company, 1937.

of vascular compression. If the blood pressure should suddenly fall, collapse of the endothelial spaces might take place with resulting ischemic necrosis of the gland.

In this case, we suggest that the pituitary necrosis started immediately after delivery with the fall in blood pressure. The atonia of the uterus and the severe hemorrhage which occurred four hours later may well have been due to the pituitary damage.

It follows that in all cases of this kind every effort should be made to maintain the blood pressure at a normal level. It has been shown that this condition is more common than is generally realized and must account for a certain number of postpartum deaths as well as for some of the late complications of pregnancy.

Special Articles

TRICHINOSIS AND NONCLINICAL INFECTIONS WITH TRICHINELLA SPIRALIS

PREPARED BY A SPECIAL COMMITTEE APPOINTED BY R. C. POLLOCK, CHICAGO, CHAIRMAN, ADVISORY COUNCIL ON LIVE STOCK AND MEAT RESEARCH

W. LEE LEWIS, INSTITUTE OF AMERICAN MEAT PACKERS; ANNA E. BOLLER, NATIONAL LIVE STOCK AND MEAT BOARD; H. PRESTON HOSKINS, AMERICAN VETERINARY MEDICAL ASSOCIATION; L. A. MERRILL, U. S. LIVE STOCK SANITARY ASSOCIATION; H. R. SMITH, SANITARY COMMITTEE OF THE NATIONAL LIVE STOCK EXCHANGE

CHICAGO

Trichinella spiralis is a microscopic parasite that may be found as an encysted larva in man and many animals, including the dog, rat, hog, cat and bear. Recent surveys have shown that the number of persons in whom trichinella larvae may be found is considerably larger than was previously suspected. There is no evidence that the presence of the parasites was accompanied, so far as known, by clinical symptoms of trichinosis.

The recent discovery of nonclinical infections with trichinella necessitates a review of the significance of the newer investigations and a consideration of present safeguards against trichinosis.

The disease trichinosis is acquired by man primarily from eating trichinous pork which has not been thoroughly cooked.¹ At the present time there is no known practical method of inspection whereby the muscle tissue of pork can be adequately examined for the presence of trichinella larvae.

The meat inspection authorities of the United States government and those interested in the distribution of meat have made vigorous efforts to establish the fact in the public mind that all pork should be cooked thoroughly.

Certain products containing pork muscle tissue are rendered safe for consumption without subsequent cooking by the consumer by rigid treatment prescribed by federal meat inspection. This treatment is based on exhaustive scientific research and involves refrigera-

tion, heating or curing. Among the products so treated under federal inspection are ready to eat hams, Italian style hams, capicoli and Canadian style bacon.

The Bureau of Animal Industry² of the United States Department of Agriculture³ designates that "no article of a kind prepared customarily to be eaten without cooking shall contain any muscle tissue of pork unless the pork has been subjected to a temperature sufficient to destroy all live trichinae or to other treatment prescribed by the Chief of Bureau." These pork products can be safely consumed without cooking by the consumer provided they were processed in a packing plant operating under federal supervision or in plants where methods of processing equivalent to those approved by the United States Bureau of Animal Industry are enforced. The inspection of meat by the United States Bureau of Animal Industry is carried out only in packing plants where meat is designed for "transportation or sale as articles of interstate or foreign commerce." It is required that such establishments be operated under federal inspection and that the inspection apply to all meat and meat food products. Such meats and meat products are identified by the legend "U. S. Inspected and Passed."

It should be stressed at this point that the legend "U. S. Inspected and Passed" on fresh pork or on ordinary varieties of cured pork which the consumer customarily cooks does not mean that the product so marked is necessarily free from *Trichinella spiralis*.

Actually, enough is known concerning *Trichinella spiralis* to enable one familiar with the facts to avoid infection by exercising reasonable caution. Schwartz⁴ stated that "in the final analysis, the prevention of trichinosis is a personal responsibility and involves the thorough cooking of all pork. Pork products of kinds customarily eaten without cooking are also dangerous unless it is definitely known that such products were prepared in a plant operating under federal meat inspection or equally thorough state or local supervision." This suggestion may well serve as part of a program designed to eradicate trichinella infections and the disease trichinosis. However, if a program of this type is to be effective, every consumer of pork and every plant operator must realize his or her responsibility. Conducive to a realization of this responsibility is a distribution of factual data concerning *Trichinella spiralis*.

LIFE HISTORY OF TRICHINELLA SPIRALIS AND SOURCE OF HUMAN INFECTIONS

The presence of *Trichinella spiralis* in susceptible animals occurs as a result of eating uncooked or untreated striated muscle of an animal infected with trichinella larvae. The encapsulated larvae, liberated in the stomach of the host by the action of the digestive juices, pass on to the intestine. In the small intestine they reach sexual maturity in about two days, after which mating occurs. These adult parasites range from 1.6 to 4 mm. in length and from 0.04 to 0.06 mm. in breadth. The females actively penetrate the mucosa of the intestine and eventually deposit their larvae in the lymph spaces of the villi. They may continue giving birth to larvae for several weeks. The larvae are car-

These authors were appointed as a special committee by Mr. R. C. Pollock.

Many physicians and co-workers have offered constructive suggestions in the preparation of this manuscript, especially Dr. Morris Fishbein, of the American Medical Association; Dr. Benjamin Schwartz, of the Bureau of Animal Industry, United States Department of Agriculture; Dr. Irving S. Cutter, of Northwestern University Medical School; Dr. James B. McNaught, of Stanford University School of Medicine, and Dr. Carl W. Applebach, of Rush Medical College.

1. It has been established that a minimum temperature of 137 F. in every part of the cut being cooked will destroy all trichinella larvae. Fresh pork which is pink has not reached a sufficiently high temperature and should not be eaten without further cooking.

2. The Federal Meat Inspection Service is administered by the Bureau of Animal Industry of the United States Department of Agriculture.

3. Regulations Governing the Meat Inspection of the United States Department of Agriculture, Bureau of Animal Industry order 211, revised. Regulations 18, sec. 7, par. 4, p. 44, 1922, Dept. Agri. Service & Regulatory Announcements, Bureau of Animal Industry, March 1937, pp. 27-31, Washington, D. C., Government Printing Office.

4. Schwartz, Benjamin: Trichinosis: A Disease Caused by Eating Raw Pork, leaflet 34, United States Dept. of Agriculture, 1929.

ried by the blood stream to the striated muscle fibers and attain their maximum size of 1 mm. in about two weeks. It is then that the larvae assume coiled positions and become encapsulated. Calcification about the capsules occurs slowly after a number of months. If not eaten by a susceptible host before they die and undergo degenerative changes, the larvae in the calcified cysts eventually die and are slowly absorbed or else become calcified.

A summary of the life cycle is shown in the diagram. The life cycle has a particular bearing on the presence of trichinella in human beings. It will be noted that the principal source of human infection is pork. Human infections from this source are made possible only by the consumption of (a) raw or undercooked pork, (b) improperly cured pork, so far as the destruc-

Gastrointestinal manifestations such as nausea, vomiting, diarrhea and abdominal pain occur during this stage.

2. Period of dissemination of larvae, or that period when the larvae are carried into the lymphatics and blood stream to be distributed to the striated muscles. There occur then fever, muscle tenderness, edema about the eyes and eosinophilia; these symptoms may become pronounced within from ten days to two weeks after infection.

3. Period of encystment, which is the convalescent period in mild involvement. In overwhelming infections, however, marked edema of the face, severe cachexia, delirium and coma may occur.

DIAGNOSIS

The cardinal points in diagnosis are (1) history of eating raw pork or underdone or undertreated pork or pork products, (2) gastrointestinal disturbances, (3) eosinophilia, (4) edema, usually suborbital, (5) high fever, (6) myositis and (7) myalgia.

The principal diagnostic methods that may be used are (1) biopsy, (2) examinations of the stool, blood and cerebrospinal fluid for larvae, (3) the precipitin test, (4) the intradermal test and (5) differential white blood cell counts.

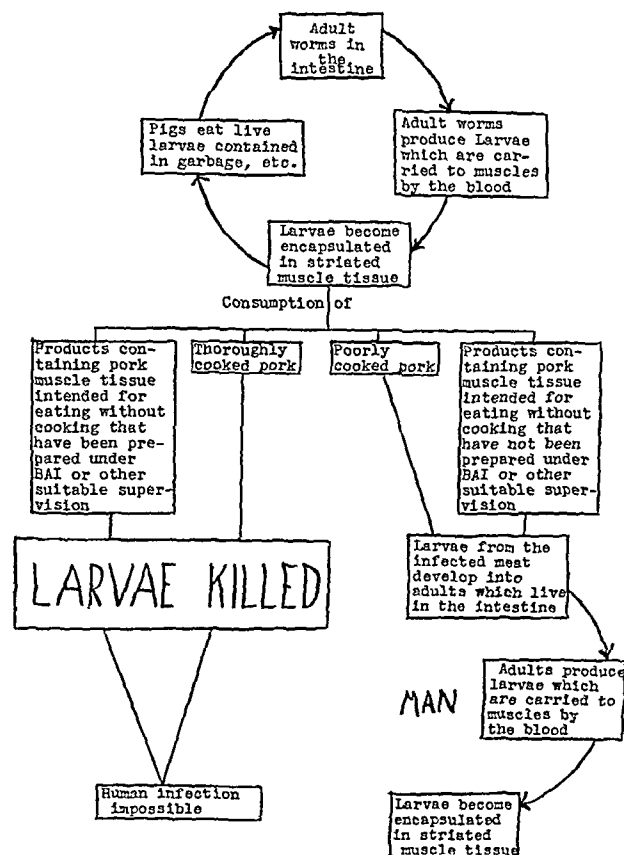
DIAGNOSTIC DIFFICULTIES

Hall⁶ and other writers before him have emphasized that the disease trichinosis is easily confused with many other pathologic conditions. From reports of individual cases and group outbreaks there is evidence that many physicians are well able to recognize the symptoms of trichinosis and make a diagnosis. Outbreaks have been recognized, and several of these outbreaks have stimulated an interest in the application of skin tests as aids in diagnosing the disease and in recognizing mild infections. For instance, an outbreak in a Vermont CCC camp recently reported by Ferenbaugh, Segal and Schulze⁷ illustrates this. In sixty-four cases trichinosis was so diagnosed. Six days after the first patient was admitted the diagnosis was made. At that time the white cell count in the first case had risen to 27,850 per cubic millimeter, 34 per cent of which were eosinophils. The presence of larvae in a sample of muscle removed from a person who was infected confirmed the diagnosis. In forty-three additional cases diagnosis was made during a period of two weeks and in twenty others there were positive reactions to skin tests.

The facts in connection with the outbreak under discussion show (1) that a correct diagnosis was made; (2) that no fatalities were reported, and (3) that progress is being made in methods of diagnosis, as evidenced by the use of the intracutaneous test.

TREATMENT

There is no completely satisfactory treatment for trichinosis. If a person consuming uncooked trichinous pork consults a physician early enough, the administration of an anthelmintic may be effective in removing some of the adult organisms from the intestinal tract. However, after the larvae have gained entrance to the circulatory system or have infected the muscles, medical treatment can only alleviate the pain and discomfort. Preventive measures, therefore, must be employed in coping with trichinosis.



Life cycle of *Trichinella spiralis*, showing source of human infection and method of preventing infection.

tion of trichinella larvae is concerned, or (c) products containing muscle tissue of pork intended for eating without cooking which have not been subjected to the treatment prescribed by or equivalent to that stipulated by the United States Bureau of Animal Industry as being necessary to kill living trichinella larvae.

THE COURSE OF THE DISEASE TRICHINOSIS⁵

According to the classic accounts of trichinosis, there are three stages of the disease, each stage corresponding to the behavior of the parasite in the body. In some cases these stages are not well defined. The principal symptoms produced in each stage are briefly as follows:

1. Period of invasion of host, or that period wherein the organisms develop to maturity in the intestine.

5. Hoyle, A. L., and Wolf, A. A.: Trichinosis: A Report of Trichinae in Vocal Cords of a Patient with Diphtheria, J. A. M. A. 111: 701 (Aug. 20) 1938.

6. Hall, M. C.: Studies on Trichinosis: III. The Complex Clinical Picture of Trichinosis and the Diagnosis of the Disease, Pub. Health Rep. 52: 539 (April 30) 1937.

7. Ferenbaugh, T. L.; Segal, Leo, and Schulze, H. A.: A Trichinosis Epidemic of Sixty-Four Cases, J. A. M. A. 110: 1434 (April 30) 1935.

INCIDENCE OF INFECTIONS

A number of surveys based on necropsies have been conducted in the United States in an attempt to determine the incidence of *Trichinella spiralis* in man. The results of these surveys are shown in the data briefly presented in table 1.

These data are not extensive enough to warrant an accurate estimate as to the general incidence of trichinella infections in the United States. Hall and Collins,⁸ Nolan and Bozicevich⁹ and Wright¹⁰ have estimated from all available survey data that the incidence of human infections in the United States may be roughly described as between 17 and 18 per cent. This estimation of the incidence was made by the use of proper correction figures to provide comparable data for those cases in which only one method had been used in making the examinations.

Assuming that the figures for incidence of trichinella infections in persons dying in hospitals are valid for the living population, the estimates just cited tentatively

Queen,¹⁴ Riley and Scheifley,¹⁵ Hinman,¹⁶ McNaught and Anderson¹⁷ and Magath.¹⁸

In consideration of the data just presented, it at once becomes apparent that the presence of trichinella larvae does not necessarily mean that the host so infected exhibited clinical symptoms. These data indicate that about 18 per cent of the population harbor trichinella larvae. It would seem from these surveys that a rather large number of larvae must be consumed in improperly cooked or processed pork if noticeable adverse effects are to be exhibited by the host.

INTENSITY OF INFECTIONS

From the incidence studies carried on thus far (table 1), it is not possible to correlate the intensity of infection with clinical manifestations. The authors of the surveys (table 1) in some cases were unable or made no attempt to secure lifetime clinical histories of the patients, and in cases in which rather complete clinical records were available there was no definite evidence

TABLE 1.—Incidence of *Trichinella* Infections

Author	Date	Place	Number of Examinations	Number of Positive Results	Percentage of Infection (Incidence)	Method of Study
Whelpley ¹²	1891	St. Louis.....	20	1	5.0	Microscopic
Thornbury ¹³	1897	Buffalo.....	21	3	14.3	Microscopic
Williams, H. U.: J. M. Research 6: 64, 1901.....	1901	Denver, Baltimore, Philadelphia and towns in New York	503	27	5.4	Microscopic
Queen ¹⁴	1931	Rochester, N. Y....	344	59	17.2	Digestion
Queen ¹⁴	1931	Boston.....	58	16	27.6	Digestion
Riley and Scheifley ¹⁵	1934	Minneapolis.....	117	20	17.1	Microscopic
Hinman ¹⁶	1936	New Orleans.....	200	7	3.5	Digestion
McNaught and Anderson ¹⁷	1936	San Francisco.....	200	48	24.0	Digestion
Magath ¹⁸	1937	Mayo Clinic.....	220	17	7.7	Microscopic
Pote ¹¹	1937	St. Louis.....	1,060	163	15.4	Microscopic
Sawitz, W.: Am. J. Pub. Health 27: 1023, 1937	1937	New Orleans.....	200	10	5.0	Digestion and microscopic
Walker, J. H., and Breckenridge, C. G.: J. Parasitol. 24: 10 (Dec. supp.) 1938	1938	Alabama.....	100	33	33.0	Digestion and microscopic
Evans, C. H., Jr.: J. Infect. Dis. 63: 337, 1938	1938	Cleveland.....	100	36	36.0	Microscopic and digestion
Nolan and Bozicevich ⁹	1938	Widely spread area	1,000	174	17.4	Microscopic and digestion
Wright ¹⁰	1939	Widely spread area	2,000	341	17.1	Microscopic and digestion
Hood, M., and Olson, S. W.: Am. J. Hyg. 29: 51, Sect. D, 1939	1939	Chicago.....	428	68	15.9	Microscopic and digestion

indicate that between 17 and 18 per cent of the population in the United States at some time during their life acquire an infection with *Trichinella spiralis*. This does not mean that this percentage of the people in the United States have or have had the disease trichinosis. Pote¹¹ has pointed out that in the 1,060 autopsies done by him, 15 per cent of the subjects yielded trichinellae; he could find no evidence, however, that any of the persons involved had shown symptoms of trichinosis during life. Nolan and Bozicevich⁹ pointed out that with rather complete clinical records for all of their 174 subjects with positive evidence, not one had a known clinical history of trichinosis. These authors likewise pointed out that this is true also for all of the 198 positive infections reported in the literature in connection with the survey studies of Whelpley.¹² Thornbury,¹³

that the patients ever had a lifetime history of clinical trichinosis. Estimates as to the number of larvae that must be present in order to produce clinical symptoms are highly speculative. In this connection, the results of studies by Nolan and Bozicevich⁹ as presented in table 2 are particularly instructive.

From a study of table 2, it will be noted that of the 1,000 diaphragms examined, only three, or 0.3 per cent, had infections as high as 501 to 1,000 larvae per gram of diaphragm muscle and five, or 0.5 per cent, had infections of more than 100 larvae per gram. In these cases, in which rather complete clinical records were available, the medical history of the patients, so far as recorded, did not show a lifetime record of clinical trichinosis.

CLINICAL CASES OF TRICHINOSIS IN THE UNITED STATES

Statistics are available which show the number of clinical cases of trichinosis reported in the United States

8. Hall, M. C., and Collins, B. J.: Studies on Trichinosis: I. The Incidence of Trichinosis as Indicated by Postmortem Examinations of 300 Diaphragms, Pub. Health Rep. 52: 468 (April 16) 1937.
9. Nolan, M. O., and Bozicevich, John: Studies on Trichinosis: V. The Incidence of Trichinosis as Indicated by Postmortem Examinations of 1,000 Diaphragms, Pub. Health Rep. 53: 652 (April 29) 1938.
10. Wright, W. H.: Studies on Trichinosis: XI. The Epidemiology of *Trichinella Spiralis* Infestation and Measures Indicated for the Control of Trichinosis, Am. J. Pub. Health 29: 119 (Feb.) 1939.
11. Pote, T. B.: Present Incidence of *Trichinella Spiralis* in Man as Determined by a Study of 1,060 Unselected Autopsies in St. Louis Hospital, Am. J. M. Sc. 197: 47 (Jan.) 1939.
12. Whelpley, H. M.: *Trichina Spiralis*, Am. Micros. J. 12: 217, 1891.
13. Thornbury, F. J.: The Pathology of Trichinosis: Original Observations, Univ. M. Mag. 10: 64, 1897.

14. Queen, F. B.: The Prevalence of Human Infection with *Trichinella Spiralis*, J. Parasitol. 18: 128 (March) 1931.
15. Riley, W. A., and Scheifley, C. H.: Trichinosis of Man a Common Infection, J. A. M. A. 102: 1217 (April 14) 1934.
16. Hinman, E. H.: Trichinosis in Louisiana, New Orleans M. & S. J. 88: 445 (Jan.) 1936.
17. McNaught, J. B., and Anderson, E. V.: The Incidence of Trichinosis in San Francisco, J. A. M. A. 107: 1446 (Oct. 31) 1936.
18. Magath, T. B.: Encysted Trichinae: Their Incidence in a Private Practice and the Bearing of This on the Interpretation of Diagnostic Tests, J. A. M. A. 108: 1964 (June 5) 1937.

between 1842 and 1936. Sawitz¹⁹ reviewed the number of clinical cases of trichinosis as reported to the United States Public Health Service between the years of 1915 and 1936. He stated that there was a total of 2,968 clinical cases on record. This is merely an approximate figure, since trichinosis up to 1933 was a reportable disease in only thirty-two states. Sawitz supplemented the trichinosis reports of the United States Public Health Service with all cases of trichinosis reported in the medical journals from 1915 to 1936. He found that

TABLE 2.—Number of *Trichinella* Larvae per Gram in the 174 Cases of Infection Found in One Thousand Examinations of the Diaphragm

Group	Number of Larvae per Gram	Number of Cases	Percentage of Cases
1.....	Less than 1	55	31.6
2.....	1-10	87	50.0
3.....	11-50	23	13.2
4.....	51-100	4	2.3
5.....	101-500	2	1.2
6.....	501-1,000	3	1.7
7.....	Over 1,000	0	0.0
Totals.....		174	100.0

1,584 clinical cases were reported. Ransom²⁰ estimated the number of clinical cases for the years 1842-1914 to be 1,575. Sawitz¹⁹ stated (in 1938) that the total number of all reported clinical cases of trichinosis recorded in the United States since 1842 amounted to between 5,000 and 6,000. According to Sawitz, in the 1,584 clinical cases reported in the medical journals between 1915 and 1936, a period of twenty-one years, there was a 4.9 per cent recorded mortality, or seventy-eight deaths. That the recorded cases as just given are incomplete must be admitted, but precisely how many were missed is unknown.

According to this mortality figure, the average yearly death rate in the United States from trichinosis is somewhat less than 0.004 per hundred thousand population. This figure at most represents only a crude estimation of the death rate from trichinosis. However, if this figure were multiplied a hundredfold, the mortality rate would still be small when compared with death rates from other diseases. United States mortality statistics for the year 1936²¹ give the death rates per hundred thousand population for a few of the principal causes of death, as given in table 3.

So far as available data show, comparatively few deaths from trichinosis have been recorded in the United States. However, because of the known incidence of human trichinella infections, the disease trichinosis merits serious consideration, especially since nonfatal clinical trichinosis is a serious disease.

The distinction between a person harboring trichinella larvae and exhibiting no symptoms and a person having the disease trichinosis, which has been emphasized in this paper, is not without analogies familiar to every physician. The lungs of many healthy persons show healed tubercles. Again, it is common knowledge that the hemolytic streptococcus and other organisms which cause pneumonia may be present in the respiratory tracts of well persons. The differentiation between the disease and the occurrence of the causative organism is not set forth with the thought of minimizing the disease, but such a differentiation is essential to a clear grasp of trichinosis as a public health problem.

19. Sawitz, Willi: Prevalence of Trichinosis in the United States, Pub. Health Rep. 53: 365 (March 11) 1938.

20. Ransom, B. H.: Trichinosis, Report of Eighteenth Annual Meeting of the United States Live Stock Sanitary Association, 1915, pp. 1-9.

21. Mortality Statistics, United States Department of Commerce, Bureau of the Census, 1936.

PREVENTION

In considering ways of preventing trichinosis, it must be realized that, so far as man is concerned, raw and inadequately prepared pork constitutes the principal source of the disease. Consequently, if swine were free of larvae man would not ordinarily become infected. Data accumulated by the United States Bureau of Animal Industry on a total of over 8,000,000 hogs examined microscopically from 1898 to 1906 showed that 1.41 per cent contained live trichinella larvae. Realizing that these data, since only the microscopic method was used, may not be representative, the United States Bureau of Animal Industry in 1933 started a survey in which hogs were examined by means of the more efficient digestion method. Schwartz²² has reported that on examination of the diaphragms of about 6,500 grain-fed hogs 0.91 per cent were found to be infected with trichinella, whereas in an approximately equal number of hogs fed garbage as collected the incidence was 4.41 per cent. It is generally accepted that swine become infected primarily by eating pork scraps containing live trichinella larvae. It becomes apparent that an effective method of preventing trichinosis in man is to eliminate the source of infection for hogs.

This can be done by not feeding hogs on garbage as collected, by cooking garbage intended as a hog feed or by keeping raw pork scraps out of garbage fed to hogs. The latter might be done by sorting garbage and removing raw pork scraps, but this is a difficult procedure in most cases.

It is imperative that all animal tissue known to carry the organism be kept from hogs, if the life cycle of the parasite is to be broken.

A second preventive measure involves the thorough cooking of all pork and pork products not processed in the manner prescribed by the United States Bureau of Animal Industry. The importance of cooking pork thoroughly should be realized by every one concerned with the preparation of meals.

In this connection, it is important to remember that cooking is always a health safeguard. Milk is pasteurized to destroy harmful bacteria, and other foods are

TABLE 3.—Mortality Statistics for the Year 1936

	Deaths per 100,000 Population
Cancer and other tumors.....	116.1
Rheumatic diseases.....	35.3
Infectious and parasitic diseases.....	115.9
Diseases of blood and blood-making organs....	6.1
Diseases of nervous system.....	111.8
Diseases of circulatory system.....	259.4
Diseases of respiratory system.....	105.1
Tuberculosis (all forms).....	55.7
Diseases of digestive system.....	72.0
Diseases of genito-urinary system.....	98.8
Violent accidental deaths.....	108.1

heated or cooked for the same reason. The proper application of heat in cooking is a valuable prophylactic measure.

A third preventive measure concerns products containing pork muscle tissue customarily intended to be eaten without consumer cooking. As for meat food products which have been processed in a manner prescribed by the United States Bureau of Animal Industry, such products are safe for consumption without subsequent cooking, provided the consumer has first hand knowledge that the products were actually

22. Schwartz, Benjamin: Trichinosis in Swine and Its Relationship to Public Health, J. Am. Vet. M. A. 92: 317 (March) 1939.

prepared in an establishment operating under federal inspection or equally competent state or local inspection. The Bureau of Animal Industry of the U. S. Department of Agriculture prescribes definite processing conditions that make such meat and meat products safe. Pork products of this type originating in meat-packing establishments which do not have federal meat inspection or its equivalent or coming from farms should always be thoroughly cooked.

SUMMARY

1. The disease trichinosis and nonclinical and subclinical infections with *Trichinella spiralis* are generally acquired by man as a result of eating inadequately cooked pork containing living larvae.

2. The results of recent necropsy surveys have shown that in about 18 per cent of the diaphragms examined trichinella larvae were present. So far as known, none of the cases had a certain history of clinical trichinosis.

3. The presence of trichinella larvae in a host does not necessarily mean that the host ever exhibited clinical symptoms. It appears that the intensity of infection must be high to produce clinical symptoms. In the light of the survey data, heavy infections are apparently not common, and the figures do not support the conclusion that millions of persons in the United States have the disease trichinosis.

4. According to published information, the total number of clinical cases of trichinosis recorded in the United States from 1842 to 1937 amounts to between 5,000 and 6,000.

5. The symptoms of trichinosis are dependent to a large extent on the location of the parasite within the host. The first stage of the disease is known as the period of invasion and corresponds to the intestinal phase of the parasite's life history. The second stage has been designated the period of dissemination and corresponds to that phase of the life cycle in which the larvae are being distributed to the muscle by the general circulation. The third stage is known as the period of encystment and corresponds to the muscle phase of the disease. These stages are not sharply defined and may overlap.

6. There is no specific treatment for trichinosis. Preventive measures must be employed in coping with the problem. In a program designed to control and eradicate *Trichinella spiralis* in man, there are two effective measures: (a) direct control by adequate and thorough cooking of all pork not specially processed in a manner adequate to destroy the larvae, and (b) indirect control by eliminating the source of infection of swine. This may be accomplished as follows: (1) All pork scraps that are to be used for garbage should be cooked. This does not necessarily mean that all garbage should be cooked, but it does mean that uncooked pork scraps should not be allowed in the garbage. If this is not practicable, garbage should be cooked before it is fed to hogs. (2) Access of hogs to all other trichinella-infected animal tissues should be prevented.

7. Much confusion has resulted from a failure to differentiate between trichinosis as a disease and the presence in man of trichinella larvae unaccompanied by apparent illness. This statement is made in no spirit of condoning the wide occurrence of larval infections in human beings.

8. Earnest efforts are being made by those concerned to abate and ultimately eradicate trichinella infections in human beings.

-407 South Dearborn Street.

THIRD ANNUAL SUMMARY OF
FOURTH OF JULY INJURIES

DUE TO FIREWORKS AND EXPLOSIVES

SECOND SERIES

As in each of the previous two years,¹ the American Medical Association has compiled a summary of injuries resulting from the celebration of the Fourth of July with fireworks in 1939. These reviews represent a resumption of similar summaries which were published from 1903 to 1916 and were discontinued in the latter year because of the reduction in the number of such injuries. Unfortunately the great increase in fireworks injuries has again made this problem a matter of serious public importance.

DEATHS

In 1939 there were thirteen deaths reported as directly due to the celebration of the Fourth of July with fireworks and other explosives. The distribution by states is given in table 1. There were five fewer

TABLE 1.—Deaths by State

State	1939	1938	1937
California.....	2	0	1
Connecticut.....	0	1	0
Florida.....	1	0	1
Idaho.....	0	0	6
Illinois.....	1	1	0
Indiana.....	1	3	0
Maryland.....	1	2	1
Massachusetts.....	2	0	2
Mississippi.....	0	1	0
New Jersey.....	1	0	1
New York.....	3	2	3
Ohio.....	0	1	1
Pennsylvania.....	0	6	0
Rhode Island.....	0	0	1
Texas.....	1	0	1
Utah.....	0	0	2
West Virginia.....	0	1	0
Totals.....	13	18	20

TABLE 2.—Recapitulation of Total Injuries by Type

Injuries	1939	1938	1937
Burns and lacerations.....	5,305	7,458	6,878
Loss of vision of one or both eyes.....	19	43	16
Injury to eye.....	158	281	291
Loss of finger, hand or other member.....	41	80	37
Internal injury, fracture or other serious accident..	37	71	*
Total injuries.....	5,560	7,933	7,205

* Not classified.

deaths than in 1938, an improvement apparently due in large part to Pennsylvania, which in 1938 led all other states with six deaths from fireworks and which in 1939 possessed a statewide law banning fireworks and recorded no deaths. Again, as in 1937 and 1938, there were two principal causes of death: mutilations received by boys or men as the result of explosions from home-made explosives, and burns suffered by little girls whose dresses were ignited from sparklers or firecrackers. One boy died as a result of dropping a match into a bottle of powder, which exploded, a splinter of glass piercing his neck and severing the carotid artery. Another died from severance of the jugular vein by a sliver of tin from a 5 quart oil can when a firecracker was set off inside. A Florida youth

1. First Annual Summary of Fourth of July Injuries, J. A. M. A. 109:1806 (Nov. 27) 1937. Second Annual Summary of Fourth of July Injuries, *ibid.* 112:236 (Jan. 21) 1939.

was killed when a keg of black powder, from which he was making fireworks, exploded. In spite of the deaths of three little girls in South Bend, Ind., in 1938, Indiana's new fireworks legislation did not become effective until after the 1939 Fourth of July: an 8 year old girl in Whiting, Ind., died from burns received when her dress was ignited by a firecracker thrown by a playmate.

TETANUS

In 1937 and 1938 two cases of tetanus were reported each year. This year, however, no report of tetanus

TABLE 3.—Injuries, by Type, Caused by the Celebration of the Fourth of July with Fireworks and Other Explosives

State	1939						1938	1937
	Burns and Lacerations	Loss of Vision of One or Both Eyes	Injury to Eye	Loss of Finger, Hand or Other Member	Internal Injury, Fracture or Other Serious Accident	Total Injuries	Total Injuries	Total Injuries
Alabama.....	16	..	..	1	..	17	15	7
Arizona.....	29	..	1	..	..	30	16	32
Arkansas.....	2	..	..	1	..	3	2	7
California.....	619	1	19	4	7	650	509	435
Colorado.....	8	..	2	..	..	10	21	119
Connecticut.....	188	..	8	1	4	201	125	104
Delaware.....	21	..	1	..	..	22	39	25
Dist. of Columbia..	52	..	2	1	2	57	31	78
Florida.....	59	..	3	..	..	62	29	23
Georgia.....	4	..	..	..	1	5	7	9
Idaho.....	6	1	..	..	..	7	5	52
Illinois.....	430	1	21	5	1	458	513	485
Indiana.....	188	1	7	1	1	198	346	278
Iowa.....	5	..	1	..	..	6	6	76
Kansas.....	59	..	..	2	..	61	74	93
Kentucky.....	6	..	..	..	..	6	11	61
Louisiana.....	12	..	..	..	..	12	2	12
Maine.....	59	..	..	..	..	59	75	67
Maryland.....	156	..	9	2	2	169	110	123
Massachusetts.....	297	2	29	4	1	333	467	376
Michigan.....	119	2	1	1	3	126	107	190
Minnesota.....	146	1	3	1	1	152	143	89
Mississippi.....	..	..	..	..	..	0	1	0
Missouri.....	352	..	3	1	1	357	553	510
Montana.....	36	..	1	1	..	38	30	50
Nebraska.....	15	..	1	1	..	17	14	49
Nevada.....	..	..	..	..	..	0	1	0
New Hampshire.....	21	1	3	..	..	25	32	40
New Jersey.....	111	..	..	..	1	112	88	72
New Mexico.....	4	..	1	..	..	5	5	1
New York.....	1,473	1	11	4	2	1,491	1,630	1,371
North Carolina.....	8	..	..	..	..	8	2	4
North Dakota.....	2	..	..	..	..	2	8	14
Ohio.....	319	3	8	4	3	337	585	353
Oklahoma.....	29	1	1	1	..	32	43	101
Oregon.....	23	1	2	1	..	27	29	45
Pennsylvania.....	74	..	5	2	4	85	1,702	921
Rhode Island.....	179	1	1	..	..	181	210	381
South Carolina.....	2	..	..	..	..	2	3	0
South Dakota.....	13	..	..	1	..	14	8	9
Tennessee.....	6	..	..	..	..	6	9	1
Texas.....	26	1	4	..	..	31	60	33
Utah.....	5	..	..	..	..	5	18	31
Vermont.....	..	..	..	..	1	1	2	20
Virginia.....	3	..	1	1	1	6	13	18
Washington.....	60	..	5	..	1	66	70	153
West Virginia.....	..	..	..	..	..	0	41	28
Wisconsin.....	62	1	3	..	..	66	117	92
Wyoming.....	1	..	1	..	..	2	6	10
Unknown.....	..	..	..	..	..	0	0	37
Totals.....	5,305	19	158	41	37	5,560	7,933	7,205

due to fireworks injury has been received. Undoubtedly its rarity is due more to the almost universal use of tetanus antitoxin following lacerating injuries than to lack of exposure.

SERIOUS INJURIES

Again newspaper clippings and hospital questionnaires record numerous serious and extraordinary injuries resulting from fireworks. There was a slight reduction, however, in the number of persons receiving eye injuries or sustaining loss of vision of one or

both eyes (table 2). Five boys in New York, attempting to make a giant firecracker, were seriously burned and injured when it exploded; one had his left hand blown off.

INJURIES

Table 3 lists the injuries recorded from fireworks in 1939 and in parallel columns the injuries for 1937 and 1938. As in previous years, these figures do not take into consideration those hospitals which failed to report or those accidents treated in physicians' offices and therefore must obviously err on the side of underestimation.

Far and away the most striking reduction in number of fireworks injuries occurred in Pennsylvania, which state received the benefit of a new law barring fireworks. This year Pennsylvania reported only eighty-five injuries from fireworks as contrasted with 1,702 the previous year, and no deaths as contrasted with six in 1938. No more convincing demonstration of the effectiveness of an enforced state law banning the use of fireworks could be obtained. Indiana, however, another bad state in 1938, recording that year 346 injuries and three deaths, enacted a bill which was not made effective until after the 1939 Fourth of July. That celebration resulted therefore in one death and 198 injuries of varying grades of severity. Many of the states with laws banning fireworks have continued to maintain satisfactory records, including Iowa, Wisconsin, Michigan and New Jersey. In both New Jersey and Michigan, however, the upward trend (table 3) is evidence of a necessity for constant attention to enforcement. Utah, although accounting for a relatively small number of injuries in previous years, has further reduced the total (and enormously so on a percentage basis) by the model law which was enacted

TABLE 4.—Injuries in Principal Cities

City	1939		1938		1937	
	Injuries	Rate per 100,000	Injuries	Rate per 100,000	Injuries	Rate per 100,000
Kansas City, Mo.*	243	60.83	...	...	...	...
Los Angeles.....	258	20.91	180	14.59	45	3.63
Baltimore.....	135	10.75	68	8.43	56	6.95
New York.....	828	11.85	1,008	14.43	524	7.56
St. Louis.....	76	9.24	295	35.88	322	39.17
Boston.....	71	9.01	...	...	...	...
Chicago.....	226	6.69	176	5.21	225	6.66
Cleveland.....	42	4.66	129	14.32	64	7.11
Detroit.....	65	4.13	22	1.29	62	3.95
Philadelphia.....	23	1.17	415	21.22	201	10.20

* Not classified in former years.

prior to July 4, 1939. Maryland, with bad records in previous years, again has failed to improve. In 1937 there were one death and 123 injuries, in 1938 two deaths and 110 injuries, and in 1939 one death and 169 injuries. Newspaper reports state that a model bill banning fireworks passed the Maryland house of representatives but was defeated in the senate by a vote of 15 to 14! Comments are superfluous. Rhode Island, the District of Columbia and Connecticut also have bad records, with 26.6, 14.2 and 12.6 injuries per hundred thousand of population respectively—the highest rates in the country. California and New York (table 3) together account for nearly one third of all injuries in the country. The Southern group of states again reported few injuries from fireworks. As previously indicated, this is due to the fact that in most sections of the South the Fourth of July is not greeted with fireworks. The Christmas season is often accom-

panied by explosive celebration and the accident toll at that time is considerable in some states.

Another area of striking improvement is St. Louis, which in 1938 recorded 295 injuries and in 1939, with the enactment of an ordinance against fireworks, only seventy-six. This may be contrasted with the record of Kansas City, in the same state and with less than half the population of St. Louis, which had 243 injuries in 1939. Comparable figures for Kansas City in previous years were not analyzed separately (table 4).

COMMENT

The effectiveness of adequate state legislation in enormously reducing the toll of fireworks injuries is especially well illustrated in this report in the case of Pennsylvania and, on a smaller scale, in the cases of Utah and West Virginia. The danger of postponing the effective date of legislative enactments is clearcut in the cases of Indiana and Maryland. With some notable exceptions, as evidenced in table 4, only those states which have enacted and enforced statewide laws have shown satisfactory evidence of control. The need for continued enforcement in those states with adequate laws is, however, also evident. The facts and figures presented completely illustrate the need for additional legislation and enforcement. There is no longer any excuse for failure to adopt effective state legislation.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

LIEBEL-FLARSHEIM SW-P SHORT WAVE GENERATOR ACCEPTABLE

Manufacturer: The Liebel-Flarsheim Company, 303 West Third Street, Cincinnati.

Designed for medical and minor surgical diathermy, the SW-P Short Wave Generator is a portable model in a carrying case, provided with a handbag for accessories and a special cabinet to contain the unit during office use. Standard accessories include an inductance cable and condenser pad, while optional equipment includes air-spaced plates on adjustable arms, cuff and sinus applicators and electrosurgical accessories. The net weight of the unit itself is 45 pounds, the net weight of the unit in the cabinet is 112 pounds, the shipping weight of the unit itself is 136 pounds and the shipping weight of the cabinet and unit is 212 pounds.

The unit incorporates a tuned-plate, tuned-grid circuit, generating energy at a wavelength in the ultrashort range of about 7 meters. The patient circuit is inductively coupled to the oscillator, and a variable condenser in the patient circuit provides for resonating with the oscillator. Two Amperex P-150 oscillator tubes and two 956 rectifier tubes are used. A filter is employed to minimize any possible radio interference. The tubes and circuits are protected from an overload by a device which automatically reduces the power and gives an audible signal to the operator when too great a power input is employed.

The firm submitted the following data on energy output measurements from the patient circuit:

Calorimeter Method.—The temperature rise induced in a given amount of water in a given time indicates an average output of 200 watts.

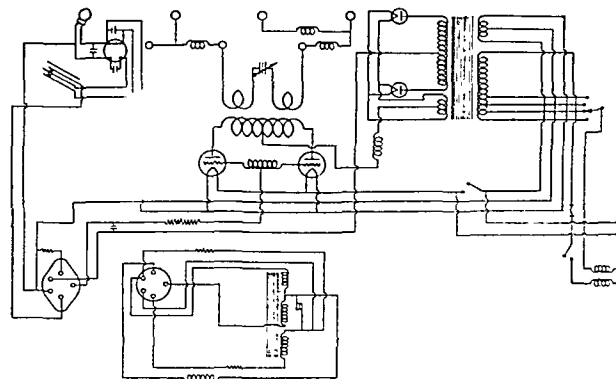
Photoelectric Cell Method.—When two 100 watt bulbs are arranged in parallel, measurement of light indicates an average output of 235 watts.

Tests carried out for the Council showed that these results could readily be confirmed and that the temperature rise on the outside windings of the transformer after the machine had been operated for two hours at full load was within the limits of safety.

The firm submitted a series of tests from a recognized hospital to provide evidence as to the performance of the unit in providing heat deep within the human body, as follows:

All treatments were given for twenty minutes to the patient's tolerance. Initial oral temperatures were all within normal range.

Air-Spaced Plate Technic.—Two disks—one 5½ inches in diameter and one 9½ inches in diameter—were applied in a plane to the anterior portion of the thigh and curved so that



Schematic diagram of circuit.

each portion of the combined plates was approximately the same distance from the skin surface. The proximal edges of the disks were spaced one-half inch, at which point the thermocouple was inserted. Both disks were spaced approximately 1½ inches from the patient's skin. The average deep-muscle temperatures for six tests were 97.6 F. initial and 105.6 F. final.

Inductance Cable Technic.—Four turns of the inductance cable were wrapped round the thigh with approximately 1½ inches of turkish toweling beneath for spacing. Two turns were taken high up on the thigh, then approximately 2 inches of spacing was allowed for the thermocouple needle and two more turns were taken below that point. The average deep-muscle temperatures for six tests were 98.1 F. initial and 106 F. final.

Cuff Technic.—Two cuff electrodes were wrapped around the thigh by means of turkish toweling to a total thickness of approximately 1½ inches with a 2 inch space between the proximal edges, at which point the thermocouple was inserted. The average deep-muscle temperatures for six tests were 98.1 F. initial and 106.3 F. final.

Pad Technic.—Two pad electrodes were curved around the thigh with turkish toweling spacing of a thickness of approximately 1½ inches with a space between the proximal edges of 1 inch, at which point the thermocouple was inserted. The average deep-muscle temperatures for six tests were 98.4 F. initial and 105.2 F. final.

A Chapman official unit also was used. This electrode was drilled out so that a thermometer could be passed through and actually come in contact with the cervical tissue. The electrode was connected to the pad terminal I by means of a special official cord to be used with this machine. For the return path, the standard 6 by 8½ inch pad was plugged into the pad terminal marked C and spaced approximately 3 inches above the lower part of the abdomen by means of felt spacers. The average official temperatures for six tests were 102.8 F. initial (after five minutes) and 109.3 F. final (after twenty minutes).

The unit was investigated by the Council clinically and found satisfactory for clinical practice.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Liebel-Flarsheim SW-P Short Wave Generator for inclusion on the Council's list of acceptable devices.



Liebel-Flarsheim SW-P Short Wave Generator, Cabinet Model.

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SATURDAY, JANUARY 6, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

HEAT AND THE NUTRITIVE VALUE OF PROTEINS

The custom of cooking food is as old as the knowledge of fire. Doubtless heat was first applied in the preparation of food to improve the flavor and for hygienic reasons, but it is commonly believed also that cooking facilitates digestion. Although favorable therapeutic effects have been claimed when an uncooked dietary regimen is followed for short periods, an exclusively raw diet is recognized as unsuited for human use. The detailed study of the influence of controlled heating on the nutritive value of foodstuffs has been undertaken comparatively recently. The proteins in whole wheat, bread and prepared cereal foods were early shown to undergo changes, when toasted, that resulted in a decrease in biologic value. The nutritive value of the crust of bread was shown to be less than that of the crumb as far as protein was concerned.¹

Later the changes in meat protein were examined from the same point of view; the ability to maintain nitrogen balance in adult animals and to support growth in the young was generally inversely proportioned to the duration and intensity of heating.²

Attention was next turned to purified proteins. Casein was subjected to controlled heating and the biologic value of the products examined. Definite damage was produced by dry heat at 150 C. for half an hour; the cause lies not in a decrease in digestibility but in some change in the histidine and lysine which renders these indispensable amino acids largely unavailable in nutrition.³ A similar investigation of purified edestin, a protein from hemp seed, has indicated again that autoclaving makes such an alteration in the protein that 1 per cent of added lysine is needed to restore its biologic value.⁴

In direct contrast to the situation discussed in the foregoing paragraphs is the effect of heat on the availability of the proteins in certain leguminous seeds. The protein of the navy bean has a low biologic value and cooking brings about a definite improvement. Of late similar observations have been made on the protein of soy beans. When fed raw, this protein has relatively low biologic value; but the meal, which results from the extraction of the oil under heat and pressure, contains protein of high quality, as shown by animal feeding experiments.⁵ Addition of cystine to raw soy bean improves the nutritive value of the protein. Johnson, Parsons and Steenbock⁶ have found that the sulfur and nitrogen containing components of the raw soy beans are digested and absorbed normally but that the ultimate retention of these compounds is much greater when the soy beans are heated. On the raw soy bean regimen the percentage distribution of the sulfur in the urine was normal, indicating that the mechanism of catabolism was normal but probably that in the raw soy bean protein there exists a sulfur and nitrogen complex which is absorbable but not susceptible of normal metabolism. Heating appears to break up this complex, rendering the parts available.

The investigation of the effect of heat on the biologic value of proteins indicates that this is a factor to be considered in nutrition, although it should be remembered that thus far such effects have been demonstrated only with relatively drastic heating. Nevertheless the as yet undefined alteration with the protein molecule and the correlated nutritional deficiency suggest new possibilities regarding the mechanism of protein metabolism.

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VITAMIN P

In 1936 Szent-Györgyi and his collaborators¹ established the presence in extracts of Hungarian red pepper and later in lemon juice of substances other than ascorbic acid which could control the hemorrhage that occurs in the course of a variety of conditions. Ascorbic acid, even in excess, was ineffective. Later it was reported from the same laboratory² that fractionation of the curative extracts had demonstrated that the active substance was present in a fraction consisting of practically pure flavone or flavone glucoside. The potency of the latter fraction was confirmed by the demonstration that the continued daily intravenous administration of the concentrate in clinical cases that were characterized by an increased permeability or fragility of the capillary wall restored the normal capillary resistance in a relatively short time. The results led to the suggestion that the large group of vegetable pigments the flavones or flavonals have an important part in animal life and that they are of vitamin nature. The name vitamin P was given to the substance responsible for the action on vascular permeability. The flavones should not be confused with the flavins, one of which, in combination with a carbohydrate, is vitamin B₂.

The claim for the vitamin-like nature of the flavones appeared to be supported by the experimental demonstration³ in guinea pigs of an increased survival time in animals on a scorbutic diet that received supplements of vitamin P concentrates. There were fewer hemorrhages present at necropsy in the treated animals than in control guinea pigs that received the unsupplemented scorbutic diet. However, efforts to confirm these data in experimental animals yielded conflicting results. The most serious objection has come from the careful investigations of Zilva, whose extensive experience with experimental scurvy warrants careful consideration of his results. This investigator reported⁴ an inability to delay the onset of scurvy or the fatal termination of the disease in guinea pigs by the administration of purified vitamin P preparations prepared according to Szent-Györgyi. Similar negative results have been reported by Moll.⁵ Indeed, Szent-Györgyi⁶ has stated that negative data have been obtained in his laboratory in a later effort to repeat the early experiments with scorbutic guinea pigs. Experiments with guinea pigs designed to establish the existence of a dietary essential other than ascorbic acid as a necessary factor for the maintenance of the normal capillary resistance are complicated by the high requirement of the guinea pig for vitamin C, a requirement that apparently

overshadows the need for other dietary essentials. The pathologic state that rapidly develops in scorbutic pigs makes it difficult to evaluate the statement of Szent-Györgyi and his colleagues that experimental scurvy is a deficiency disease caused by the combined lack of vitamins C and P.

As definite conclusions regarding the requirements for a dietary essential other than vitamin C for the maintenance of normal capillary integrity cannot be drawn from guinea pig experiments, evidence for the existence of vitamin P must rest on the original clinical observations and the successful repetition of these results. Data of this type are now available in the recent well planned experiments of Scarborough.⁷ The patients used in this investigation all had abnormally increased capillary fragility, which from the clinical history, appeared to be definitely related to a dietary deficiency. The degree of capillary fragility was established for each case and the diet then adjusted to contain supplements of either fresh fruit, a mixture of vitamins A (oral), B₁ (parenteral), C (oral) and D (oral), a crude flavone fraction from orange juice, a purified flavone preparation, or a solution of flavones prepared from orange peel according to the method of Szent-Györgyi. A definite increase in the resistance of capillary walls to the application of pressure (both negative pressure, suction and positive pressure tests were employed) was obtained only in those instances in which the flavone-containing extracts were employed. This improvement was obtained when the orange or lemon juice concentrates were given by mouth, by intramuscular injection or through the rectum. The administration of ascorbic acid by mouth or by injection failed to produce this beneficial effect, whereas increased capillary resistance was evident in all instances following the use of vitamin P concentrates, including cases in which ascorbic acid was inefficacious.

The experiments of Scarborough appear to establish more definitely the possible existence of a dietary factor that is essential for the maintenance of capillary resistance. The capillary fragility present in the clinical cases studied was not ameliorated by ascorbic acid and the evidence clearly indicates the nonidentity of the latter vitamin with vitamin P. The precise chemical nature of the substance or substances present in the concentrates which Scarborough employed has not been established but the investigations cited earlier indicate their flavone nature. It is a matter of future investigation to establish unequivocally the nutritional significance of vitamin P, to demonstrate more clearly the mode of action of this dietary adjunct and to elucidate its chemical nature. Of considerable interest also is the possible physiologic relationships of vitamin P to the antihemorrhagic factor vitamin K, which by virtue of its physiologic effects must also be related to capillary integrity.

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5. Moll, T.: *Klin. Wchnschr.* **16**: 1653 (Nov. 20) 1937.

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Current Comment

THE SECOND ANNUAL CONGRESS ON INDUSTRIAL HEALTH

One of the main objectives of the Council on Industrial Health is dissemination of information to the medical profession about important developments in the field of health control of workers. In keeping with this intention, the second Annual Congress on Industrial Health has been arranged; the program appears on page 61 of this issue of *THE JOURNAL*. The first of these congresses was devoted largely to orientation in a rapidly expanding field, emphasizing particularly the extent of participation already undertaken by governmental, medical and other interested organizations. The second congress devotes time to symposiums on syphilis in industry, evaluation of disability and industrial physical examinations. Other presentations will include a discussion of the shortcomings of rehabilitation of the physically disabled from the point of view of all participating agencies—the physician, the compensation authorities and the rehabilitation groups themselves. The subject of mental hygiene in industry will be introduced, in keeping with its growing usefulness in the field of personnel relationships and as an important development in the application of medical and protective health measures among employed groups. Similarly the influence of nutrition on physical standards of working people will be presented as a factor of first significance in the improvement of health in all segments of the population, more important in the opinion of many students than the direct effects of occupation alone. A special invitation to attend has been directed to members of committees on industrial health in the state and county medical societies; time has been set aside for discussion with such representatives of matters of organization, present programs and future activities.

CHRONIC MALARIA

Chronic malaria is a disease frequently lacking in the classic picture of infection characterized by chills and fever. The Fondés¹ in a recent article on this subject classify it into two varieties, one of which embraces a latent, an atypical and a typical late phase. In this form the defensive forces are more or less vigorously operative and the progress of the disease is arrested because of prompt destruction of parasites by a highly developed immune mechanism. This condition frequently remains unrecognized, and the characteristic lower level of vigor is passed off as some individual characteristic or idiosyncrasy. In the second form—nonreactive chronic malaria—the patient is ill, disabled and confined to bed, but demonstration of the parasites in the blood is rarely possible. The temperature is normal or subnormal for the greater part of the time and often the dry copper-colored skin is the only clinically recognizable diagnostic feature. The practical diagnosis of chronic malaria, the Fondés point out, rests in part on an exhaustive history for previous attacks of malaria and complete physical examination,

which generally discloses a muddy, subicteric tint of the skin and scleras, coated tongue, general pallor and, frequently, enlargement of the spleen. The provocative drug test, with full doses of quinine or atabrine for one day, followed by recognizable symptoms within a few days to three weeks, is, they say, the most valuable method of determining malaria in atypical and latent phases. The most commonly useful laboratory observation incriminating malaria is stippling of the red cells twenty-four hours after an attack and definite increase of the eosinophils. The management of chronic malaria, they say, demands a prolonged plan of treatment, using either atabrine or quinine in alternate courses provided there is no contraindication to either drug. Present methods of approach in preventing the spread of malaria are inadequate, they believe, and the solution, as applied to the community, lies in thorough treatment of the individual patient. Efforts should therefore be directed at this group of plasmodic carriers, which are abundantly present.

THE FOURTH OF JULY RECORD

Statistics on the injuries from fireworks and firearms in 1937 and 1938, occurring by way of celebration of the Fourth of July, have been collected and published in *THE JOURNAL*.¹ Again in 1939 these figures have been compiled and are presented in this issue (page 39). In 1939 the number of deaths from fireworks was thirteen, as contrasted with eighteen in 1938 and twenty in 1937. The number of injuries recorded has also shown an appreciable reduction, particularly in certain states which have enacted satisfactory control legislation. Three states in particular, Pennsylvania, Utah and West Virginia, clearly demonstrated the effect on human life and limb of adequate legislation satisfactorily enforced. In one state, Indiana, with previous bad records, a control bill was passed but did not become effective until after the 1939 Fourth of July; that state recorded one death and 198 injuries. In another state, Maryland, an adequate control law passed the house, according to newspaper reports, but was defeated in the senate by a vote of 15 to 14; Maryland reported one death and 169 injuries. The need for satisfactorily drawn legislation and active enforcement remains obvious. Only recently, according to newspaper reports, the movement to obtain "safe and sensible control" of the sale and use of fireworks has received added impetus by the adoption of a resolution by twenty-five public officials at a conference on interstate cooperation, urging the Council of State Governments to draft a model law for the control of fireworks. It was pointed out that one state alone is relatively helpless in the matter of fireworks control and that by way of example it was apparent that the effect of a prohibition on the sale of fireworks in New York City had been nullified by the sale in adjacent communities. These points have been repeatedly emphasized by the American Medical Association in commenting on the control of fireworks. Obviously both additional legislation and continued emphasis on enforcement are necessary in order to avoid the tragedies resulting from this almost completely controllable situation.

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ORGANIZATION SECTION

MEDICAL CARE FOR MIGRATORY WORKERS

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Migration, in a broad sense, has characterized the development of the United States from its beginning. Untouched natural resources kindled the hopes, imagination and pioneering spirit of the early generations to leave benefits incident to the more settled communities for the anticipated fruits of vast unexploited fields. These pioneers exhibited daring, courage and vision; they were willing to undergo hardship to demonstrate the opportunities which awaited in a new country. Until recently these opportunities for individual improvement were realistic. Gradually this type of migration, so necessary in the pioneering development of a new country, extended to practically every remaining frontier; but with the exploration and utilization of land and natural resources, migration was not to cease—it was to assume a very different form with the coming generations.

Migrants move nowadays because of dissatisfaction with their economic status; they change residence because of glowing reports of greener "distant fields"; they leave a settled home in the belief that a change of climate will be beneficial to the health of some member of the family; they change residence to join friends or relatives from whom they dislike to be separated; they flee the environment that had been the scene of domestic trouble and they find numerous other excuses, valid or fanciful, that lose for them their stability and gain the uncertain status of the transient.

Between 1920 and 1930 the net loss in rural population through migration ranged from 7.9 per cent in the Middle Atlantic to 15.8 per cent in the East South Central states. All except eight states showed decreases in rural population with the heaviest losses in the North Central and Southern states. Only the Pacific states experienced an actual increase in rural population through migration. On a county basis, 2,542 counties lost and only 517 counties gained rural population during this decade.¹

The annual net migration from farms for the period 1930 through 1934 averaged 120,000 persons in comparison with an annual average of 600,000 persons during the decade preceding 1930.¹

The migration of today is difficult to explain because of the complexity of motivation. The term implies a wide range of movement which begins just beyond absolute stability and extends to almost continuous mobility. Studies of population movements are of considerable importance to a better understanding of many current social, economic and industrial problems. Such studies could be made to include even the movement within city boundaries, but for this study only the groups of migratory workers who live and work on the road are to be considered.

Transience has been a recognized social problem for many years, but its nature and extent during recent times were first disclosed during the operation of the Federal Emergency Relief Administration. From September 1933 to September 1935 the Federal Emergency

Relief Administration gave relief to approximately 200,000 transient families comprising about 700,000 persons.²

Among the many factors which influence families to leave a settled residence are, in order of importance, unemployment, ill health, farm failure, inadequate earnings, domestic trouble, and dislike of separation from friends or relatives. These conditions account for about 76 per cent of the reasons for leaving settled residences. Studies indicate that more than three fourths of migrant families declare economic betterment to be the objective which they hope to realize at their destinations.

Maps showing the state of origin of migrant families indicate that there was in 1935 a considerable movement out of and into most of the states.

The direction of movement of migrant families in 1935 was still predominantly westward. The flow of families into California, Colorado, Washington, Oregon, Idaho, Kansas and New Mexico far exceeded all other net movements. A statement of net population changes as of June 1935 shows that, of the net displacement gain of 10,524 families for the United States, California gained 4,803 and Colorado 1,009; the greatest net loss, 2,027 families, was found in Oklahoma.³

The study of 1935 migration revealed that two fifths of all migrant families had first applied for transient relief in the community where they had been residing. This indicates that a large percentage of migrant families had completed their migration before applying for transient relief.

From the point of view of public assistance, it is necessary to distinguish between chronic wandering, which characterizes the type of persons to whom stability has become either impossible or unattractive, and migration which is generally a purposeful movement with stability as its objective.⁴

The study of the 1935 samples of migrant families summarizes the personal characteristics of the migrant group as follows:

1. Youth was a clearly defined characteristic of the economic heads of migrant families. One half were under 35 years of age, and four fifths were under 45. In contrast, only one third of the heads of all resident relief families were under 35, and only three fifths were under 45. Among male heads of families in the general population about one half were under 45. This distribution indicates the presence of many infants and school-age children in the migrant families; and, indeed, four fifths of the children in these families were under 15 and one third were under 5 years of age.

2. Migrant families were small families. Well over half contained only two or three members. The average family size was 3.1 persons, significantly less than the size of both resident relief families and families in the general population (excluding one-person families).

3. Migrant families were preponderantly native-born white families. By comparison with the general population, foreign-born and Negro migrant family heads were underrepresented. These two minority groups were overrepresented, however, in

2. Migrant Families, Works Progress Administration, Division of Social Research, 1938, p. xxi.

3. Migrant Families, p. xxiii; table 6, p. 150.

4. Migrant Families, p. xxv.

1. Rural Migration in the United States, Works Progress Administration, Division of Research, 1939, p. xvi.

the resident relief population, showing that although more frequently victims of the depression, these groups nevertheless tended to remain immobile. During recent decades the foreign born have tended to settle in large industrial centers and to group themselves according to racial or national ties. These ties have acted as deterrents to migration, despite limited economic opportunity and recurring unemployment. Moreover, local prejudice outside the highly industrialized areas makes the migration of distressed foreign born persons more difficult than of the native born. Custom and prejudice operate to restrict the mobility of Negro families just as effectively.

4. There was a small incidence of separation, widowhood and divorce among the family groups. Among migrant family heads the proportion that were separated, widowed or divorced was less than that found in the general population.

5. Migrant family members had a higher level of schooling completed than the heads of either the urban or rural resident

ing the harvest season the labor peak is from three to four times higher than at the lowest point of the year.

Some routes may serve to illustrate the surges of migration but the actual variations of individual migrations approximating these patterns are numberless. A well filled year might include picking peas in Imperial Valley in February and March, at Mipomo on the central coast in April, and in Alameda County or Yolo County in May; picking apricots in Contra Costa County in June, and in Santa Clara County in July; picking grapes in Fresno County in August and September, and peas in October; picking peas in Imperial Valley in November and December, and awaiting the maturity of the next pea crop in February. Some migrants find alternative spring employment in the citrus belt of Tulare County. For other migrants the year's work goes somewhat as follows: pea picking in Imperial Valley in February and March, potato picking or cotton chopping in Kern County in May and June, apricot picking in Kings County in July, grape picking in Fresno County in August, and cotton picking for the rest of the year in Kern County.

Filipino migrants, comprising young single men with hardly an exception, commonly work back and forth between lettuce crops in the Salinas and Imperial valleys and the grape harvest in Fresno County, or between the sugar-beet crop in the Salinas or Sacramento valleys, the asparagus crop in the Stockton Delta, and the grape harvest in the San Joaquin Valley. Filipinos practically never pick cotton.

Mexican migrants, who move typically in family groups, frequently dovetail work in lettuce and cantaloups in Imperial Valley with peach and apricot picking near Hollister or in the Santa Clara Valley, and grape picking near Fresno. Cotton picking in the San Joaquin Valley or walnut picking in Ventura County also appear in the routes as alternative employments in the fall.

Three routes actually followed by particular migrant families in 1934 may be set down as examples:

Mexican family: Salt River Valley, Ariz., for lettuce, January-March; Imperial Valley, tying carrots, March-June; Conejos, picking apricots, June; Tulare County, picking peaches, July-August; Fresno County, picking plums, August; Tulare County, picking cotton, September-November; Salt River Valley, for lettuce, November-March.

Washington family: Cazadero, for independent trapping, January-March; Yuba City, thinning peaches, March-May; Sonoma County, picking cherries, May-June; King City, picking apricots, June; Sonoma County, picking apples, June-July; Exeter, peach dry yard, July-December.

Oklahoma family: Wasco and Buttonwillow, picking cotton, planting and picking potatoes, January-August; Selma, picking peaches, August; Shafter, picking cotton, September-December; Wasco, picking cotton, December.

Except for work near Selma, in Fresno County, the year's migration of the Oklahoma family was entirely within Kern County.⁶

In 1938 the Farm Security Administration made "A Study of 6,655 Migrant Households in California." This report states that:

California normally has many migratory-casual workers employed in agriculture as a usual occupation. To this supply many resident persons who have lost former non-farm employment have been added during the depression. In addition, dispossessed families have come from other states. With the oversupply of labor thus available, wages have been depressed and individual work periods shortened. It has been difficult, if not impossible, for the worker to maintain himself on his earnings and save enough for the slack periods.

Employable persons resident in the state for one year or longer, who are in need, may obtain relief from the State Relief Administration or be certified to the Works Progress Administration, but for those without residence in California, state and local funds are not available for care except as

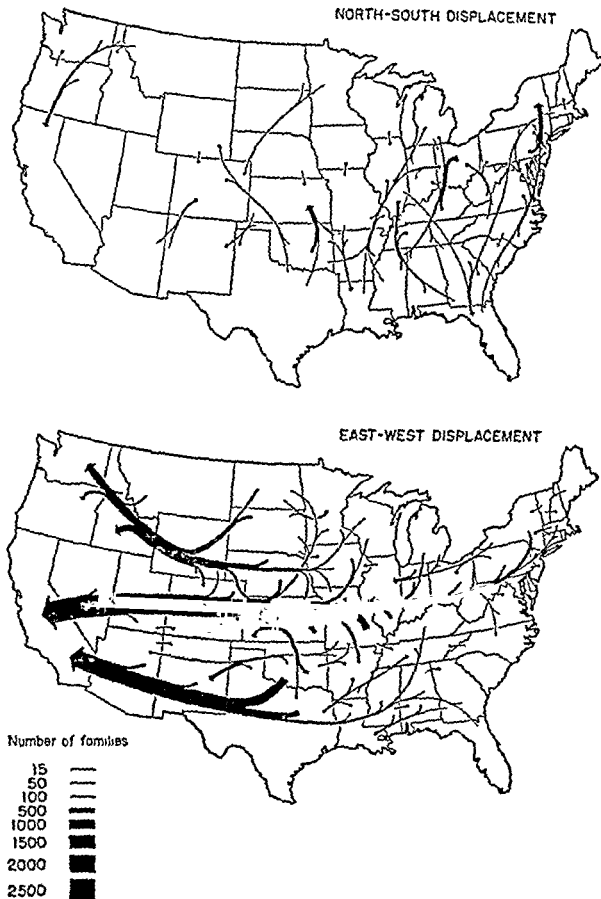


Fig. 1.—These maps show the general trends and volume of migration of families, north-south and east-west ("Migrant Families," Works Progress Administration, 1938, p. 41).

relief population. Some of the difference between the school attainment of migrant and resident relief families is attributable to the youth of the migrant group and to the under-representation of Negroes. In any event, it is clear that migration was not caused by lack of education.⁵

The flow of migration toward the West has been mentioned. The overwhelming majority of this westward flow has been into California. The border plant control stations between July 1, 1935, and September 1938 counted more than 285,000 individuals in need of manual employment who entered California by motor vehicle. The nature of California agriculture, which is industrialized and uses a greater percentage of hired labor than that in any other state, has encouraged migrant families to believe that they could find at least seasonal agricultural work to maintain themselves. Dur-

5. Migrant Families, pp. xxvii, xxviii.

6. Patterns of Agricultural Labor Migration Within California, United States Department of Labor, Bureau of Labor Statistics, 1938, p. 3.

very temporary emergency measures. Ever since the shutdown of the federal transient program in 1935, persons in California with knowledge of the problem have sought to find ways and means of helping the nonresident within the state who is in need.

A partial answer came in February 1938, when authority was granted the Farm Security Administration of the Department of Agriculture to disburse appropriated federal monies for direct relief to nonresident migratory agricultural workers. The purpose of the grant was to give temporary aid to non-residents in the rural sections of the state. United States Department of Agriculture Administration order 92 (revision 2), dated Aug. 14, 1936, prescribes the conditions imposed by the Farm Security Administration for making grants to individuals in furtherance of rural rehabilitation and relief in stricken agricultural areas. Eligibility requirements as stated in administration order 92 are as follows:

"2a I. Farm owners, farm tenants, share croppers, laborers, persons now on the official rolls of the RA and other persons who now live on farms or in farm areas and who, when last employed, received the major portion of their income from farming operations will be eligible for grants under this order, without regard to availability of suitable and adequate soil resources, and other conditions and characteristics, other than employability, ordinarily indicating potentiality for rehabilitation.

"A Need for public aid of persons who qualify under paragraph 2a I thereof will be established when it has been determined through personal investigation that their material and credit resources are inadequate to meet accepted subsistence requirements, to maintain health and prevent human suffering."

According to the Administration order, grants may be made to meet emergency needs for food, fuel, clothing, shelter, indispensable medical services and other essential subsistence goods or services.

It is the policy of the Farm Security Administration to give emergency grants only to persons who are not eligible to the relief programs of other agencies within the state. The California State Relief Administration, as stated previously, accepts employable persons who are in need and who have a year or more of residence in California. The Farm Security Administration policy states, "cash grants will not be made to migratory farm labor applicants who upon investigation are found to have resided in the state of California for a year or more preceding application." Temporary aid may be given pending care by the State Relief Administration or County Welfare departments.

Under California law, unemployable persons who are in need may only be given long-time care by County Welfare departments after three years of residence in the state. Farm Security Administration grants "may not be made to clients who for health or other reasons are permanently unemployable in agriculture." However, "temporary illness or inability to work due to injury should not be considered as grounds for refusing an application or for closing a case."

During the eight month period February through September 1938, 15,410 households received Farm Security Administration emergency grants in California. Of the number who received grants at some time during this period, 12,032 cases were closed on Oct. 1, 1938. The comparatively small number of cases active October 1 may be accounted for largely by the fact that September and October are months of high agricultural labor requirements in California. As soon as the harvest season is over many of these persons will again be in need of relief.⁷

The summary of observations in this report is pertinent to an understanding of later developments in the organization of medical services for these people:

1. The 6,655 migrant households studied, receiving Farm Security Administration emergency grants in California in 1938, came to California chiefly from four states, Oklahoma, Texas, Arkansas and Missouri. More of the migrants came

from Oklahoma than from any other state. It was the state of origin for 2,771 migrant households, two fifths of the total group studied.

States in the path of this westward migration, particularly Arizona, Oregon, Washington, Idaho, Colorado and New Mexico, were temporary residence of many of these migrants [pages 11-13].

2. The counties of origin of the migrant households tended to group themselves into areas of density. Such areas were not only found within states but were formed by counties of two or more adjoining states [page 17].

3. Lack of work and drought were the two major reasons for migration reported by the 6,655 migrants. Farm industrialization and mechanizations, soil destruction and the breakdown of tenancy, as well as lack of adequate local relief, and high incidence of ill health during depression years are other significant reasons for migration reported by economists [pages 26-35].

4. The heads of the migrant households had had long years of residence in their former homes prior to migration. Almost one half had lived for twenty years or longer in the states from which they came; only 17 per cent had residence of less than five years in the states from which they migrated [pages 35-37].

5. The migrants did not all come to California directly; temporary stops en route were frequently made. Approximately one half of the group had left

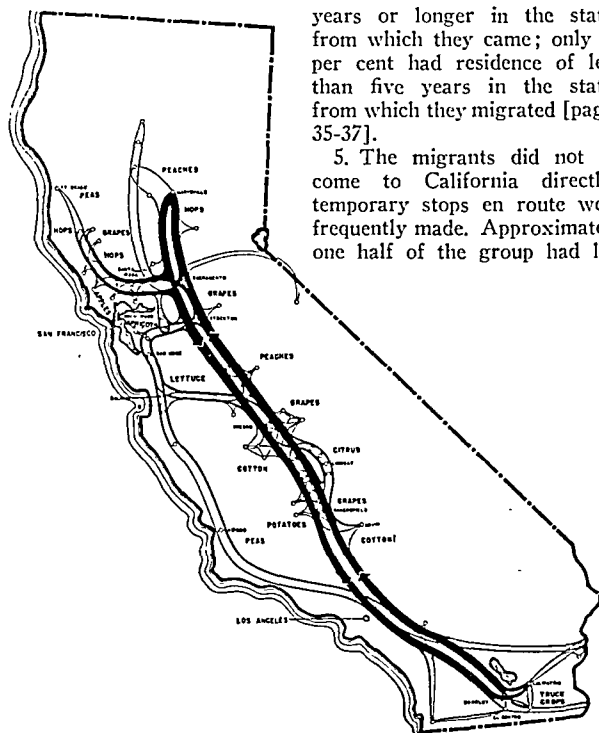


Fig. 2.—Ranks of fifty white migrant families June 1934-June 1935 as they followed the crop in California ("Patterns of Agricultural Labor Migration Within California," United States Department of Agriculture, Serial No. R. 840, 1938, p. 4).

their home states seven months or longer prior to receiving the Farm Security Administration emergency grant; only 28.8 per cent had been in California seven months or longer. Farm and non-farm migrant groups showed some slight differences in the length of time they had left states of origin and length of time since entering California [pages 39-44].

6. Ninety-two per cent of the migrants were white, compared with 89 per cent in the general population of the United States [page 45].

7. The heads of the migrant households were practically all men. Women as heads of households represented less than 4 per cent of the total [page 47].

8. The most usual household was comprised of three persons, two adults and a child under 5 years of age [page 54].

The distribution of the households according to size, that is, households consisting of one person, two persons, and so on, was almost identical with the percentage distribution of family size for the general population [page 50].

The children of the majority of the migrant households were young. More than half were under 10 years of age; only one fifth were 15 years of age or over [page 55].

7. A Study of 6,655 Migrant Households in California, United States Department of Agriculture, Farm Security Administration, 1939, pp. 2-5.

9. The heads of the migrant households were men in their best working years. More than three fourths of the group were between 20 years and 44 years of age; only 7 per cent were 55 years of age or over. The median age for all heads of households was 33.5 years [page 56].

10. The usual occupation prior to migration for the majority of the heads of the households was farm labor. Of those reporting usual occupation as "farmer," 67.8 per cent were farm laborers, 17.7 per cent tenants, 10.8 per cent share croppers and 3.7 per cent owners. Of those reporting as nonagricultural workers, 33.7 per cent were unskilled manual laborers, 27.8 per cent semiskilled, 19.7 per cent skilled workers, 10.6 per cent servants and 8.2 per cent all others [pages 59-63].

11. The migrant heads worked an average (median) of six months during 1937. The work was usually in agriculture. Although 66 per cent enjoyed six months or more of work, only 34.7 per cent enjoyed eight months or more of work, and less than 24 per cent were employed nine months or more [pages 64-67].

12. The greater number of the migrant households were living in three California counties, Kern, Fresno and Tulare, at the time they received the earliest Farm Security Administration grant. These are agricultural counties with high seasonal labor requirements [page 68].⁸

Thus there continues to be a westward flow of population composed predominantly of native white men and women in the prime of life; as far as age mobility and the disappointments which often come at the end of the migration are concerned, this might be a return of the classic picture of pioneer days. There must be added to this picture the migrant's needs for the necessities of life and the rigidity of state laws and regulations and county requirements imposed on nonresidents who apply for material assistance.

These thousands of migrants with their families and their meager belongings created a new and acute problem for the West. Having little more than a hope of finding work, and some sort of motor transportation to move from the present job to the next uncertain job, most of these migrants could scarcely ever look forward with confidence in their own unaided ability to provide even the necessities of life. Housing and sanitation were (and still are) in some places extremely uncivilized. Faulty nutrition, worry, disappointments, homesickness, fatigue, exposure, long hours at work and almost unbelievable sanitary conditions must have added something to at least a portion of their medical needs. Although it was found later that some of these people were suffering from health impairments of long standing, many of them must have had an abundance of natural resistance not to succumb to unfavorable conditions.

It matters little at the moment whether these people are victims of circumstance or whether they chose the life they are now compelled to live; they are human beings with needs similar to those of the stabilized population; their plight may be due in some measure to present day social, economic and industrial trends.

It is beyond the scope of this review to discuss methods for the stabilization of this group. More data are needed, particularly on the available numbers of qualified workers classified as to tasks, localities, the part that industries can play in taking up the slack in agricultural employment, the part which the state may and should take in providing employment during the slack seasons in agriculture and the manner in which seasonal agricultural workers may be given an

opportunity to market their services over longer periods in order to increase their yearly incomes.⁹

It is believed, however, that as far as individuals or families in this migrant population are indigent and although possibly employable are unable to become self supporting, their care is a community responsibility to be supported from public funds.

PLANNING AND ORGANIZATION OF THE MEDICAL PROGRAM IN CALIFORNIA

The severe floods of the winter of 1937 and 1938 aroused Californians to the tragedy of the many Dust Bowl and migrant families who had entered the state in large numbers since 1934.

The Federal Transient Program ended in 1935. Relief activities were then turned over to the State Relief Administration, which immediately established a policy of denying aid to the nonresident applicants who refused to consider return to their native states. The agricultural migrants, when asked to agree to return, answered "Why go back? We have no home."

The relief situation among migrants soon reached disastrous proportions. Since local aid was sporadic and utterly inadequate, these conditions influenced the Farm Security Administration, formerly the Resettlement Administration, to adopt an emergency relief policy of making grants in cash and commodities to these hard-pressed migrant families.

During the winter of 1937-1938 serious illness and malnutrition among migrants were reported to the Regional Office of the Farm Security Administration. These reports even expressed a fear of the possibility of epidemics among the migrant agricultural workers.

The Farm Security Administration endeavored to prepare, in cooperation with the State Relief Administration, a program for administering federal aid to agricultural transients. The plan was not successful and the Regional Office of the Farm Security Administration then decided to make the relief furnished to transients through its facilities include medical care as well as food.

There were difficulties in assuring payment for medical care through the use of grants to highly mobile individual families who might leave the vicinity before the grant check was delivered. Accordingly, some method of direct payment seemed necessary to make the program workable.

Prior to the adoption of a definite medical program, the directors of the State Department of Public Health and the Public Health Service and representatives of the California Medical Association were consulted. An outline of the proposed plan was presented to the California Medical Association which officially approved it in principle and later called a meeting at which the proposed program was explained to representatives of the county medical societies in the areas in which medical services were to be provided.

ESTABLISHMENT OF THE AGRICULTURAL WORKERS HEALTH AND MEDICAL ASSOCIATION AS A CORPORATION

Articles of incorporation and by-laws, prepared by the legal department of the Farm Security Administration, approved in Washington and filed with the California secretary of state, created an association to be known as the Agricultural Workers Health and Medical Association. The association, although incorporated in California, was given legal authority to do business in

⁹ Adams, R. L.: Seasonal Labor Requirements for California Crops. Berkeley, Calif., University of California, 1932, p. 27.

⁸ A Study of 6,655 Migrant Households in California, pp. 7-10.

other states. This was done for the purpose of permitting the extension of a medical aid program into Arizona without necessitating the creation of another corporation.

The articles of incorporation provided for a nonprofit association for the purpose of mutual benefit and further rehabilitation of its members. The association was empowered to engage in any activities involved in or related to the provision of medical and dental services, nursing or hospitalization, medical and surgical supplies and appliances and such other services and supplies as might be incident to the convenience and preservation of the health of its members.

The articles of incorporation empowered the association to borrow from the Farm Security Administration of the United States Department of Agriculture or from any other federal or state agencies moneys, goods or services necessary or convenient to the accomplishment of the objectives of this association.

Principal offices for the transaction of business for this association were to be established in Fresno County, Calif., but the association was given authority to maintain offices and places of business in such other localities within or without the state of California as the board of directors might determine.

The by-laws of the association provided that only low-income farm owners, farm tenants, share croppers, farm laborers, drouth refugees or persons who, when last employed, obtained a major portion of their livelihood from agricultural or other types of farming operation should be admitted to membership.

The control of the association was to be vested in a board of directors consisting of seven members. Four of the board members were to be designated by the administrator of the Farm Security Administration of the Department of Agriculture; one was to be a physician designated by the California State Department of Public Health; two were to be physicians designated by the president of the California Medical Association.

The plan of operation for furnishing medical assistance to agricultural workers by the Agricultural Workers Health and Medical Association states:

TITLE I

Purpose of the Agricultural Workers Health and Medical Association.—The association will engage in providing medical and dental care to migratory agricultural workers for whom local, county and state medical facilities are not available due to local residence regulations.

TITLE II

1. *Membership.*—The Agricultural Workers Health and Medical Association will receive applicants for membership in the association by referral from representatives of the state department of public health and from representatives of local relief and health agencies. The applicants will be interviewed and investigated by medical social workers employed by the association to determine their status as low-income agricultural workers and their inability to obtain medical assistance from county welfare or other agencies, because of residence requirements or lack of funds. The application form for membership is attached.

The client agrees in the application for membership that he is obligated to repay the association for such moneys expended by the association in paying bills incurred by him, his immediate family or dependents, for emergency medical and dental treatment, services and supplies.

2. *Procedure for Receiving Medical and Dental Care.*—Upon acceptance of the client's application for membership in the association, he will be issued a membership certificate privileging him to obtain emergency medical and dental treatment, services and supplies, subject to and as defined by the by-laws and other regulations of the association.

The member will be referred to doctors of medicine holding unrevoked licenses to practice in the state of California, eligible to membership in the county medical societies and who have agreed to participate in the program, or dentists holding unrevoked licenses to practice in the state of California. A referral will be signed by the medical social worker. This referral will serve as authorization for one visit by the physician. Upon examination at the time of the first visit, the doctor will recommend the necessary treatment to the client upon a form provided entitled "Authorization and Invoice for Medical and Dental Services or Supplies." This authorization, when approved by the medical social worker and signed by the client, will serve as an authorization for subsequent treatment not to exceed ten visits or two weeks.

The authorized services will include drugs and special diet requirements prescribed by the physician, hospitalization where necessary, x-ray and laboratory services, and emergency dental extractions and treatment.

Medical assistance may be obtained by members of the association on presentation of their membership certificates at any of the district offices of the association.

Following the extension of medical service to the member, the doctor, hospital or druggist will present copy of the authorization and invoice to the association for payment. There are attached detailed instructions entitled "District Office Procedure" for carrying out the above-mentioned procedure. . . .

TITLE V

Modifications of Plan of Operation.—Modifications of this plan of operation shall be made only with the approval of the board of directors of the association.

THE OPENING OF DISTRICT OFFICES AND ESTABLISHMENT OF LISTS

The state of California was divided into districts with regional headquarters in Fresno. A district office for district 1 was established in Fresno on May 4, 1938.

During the month of May 1938 six district offices were set up and located in Fresno, Merced, Stockton, Tulare, Madera and Marysville.

The general manager, in selecting personnel for the medical-social division of the program, cooperated with the state department of public health, which assisted him in interviewing and selecting suitably trained medical-social workers.

Before the program was put into operation in California, all physicians, druggists and private hospitals were advised of the scope and objectives of the program. Physicians, druggists and hospitals were given details of the fee schedules to be used, and those who desired to participate in the program were listed to give service in each respective district.

Although the California Medical Association had approved the program in principle, there was some reluctance on the part of the physicians in most localities to be placed on the association's list of physicians. This hesitancy was due chiefly to a general fear of any new type of government controlled medical program. A number of physicians expressed some unwillingness to have these agricultural workers as patients in their waiting rooms. However, within a comparatively short time this feeling was overcome and in every locality the majority of the physicians asked to have their names placed on the association list.

Dentists were not immediately included in the program, although some dental work was done from the inception of the association through the cooperation of various dentists. In August 1938 names of dentists were added, at their request, to the list of the association's services.

Since the beginning of the program on May 4, 1938, ten districts have been opened in California, extending

south to the Imperial Valley and north as far as Wil-
lows, Marysville and Santa Rosa. The coast regions
have been serviced out of the San Jose office.

The mobility of the migrant population forces the
personnel of these district offices literally to follow the

crops. The need in some vicinities is for only a short
period of time; the height of a harvest season may
require 3,000 agricultural laborers one week and a bare
dozen the next. When the peak passes, the office per-
sonnel may move on fifty or a hundred miles to a new
scene.

In some counties in California there has been a con-
tinuous need for permanent offices the year round. For
example, Fresno County has maintained permanent
quarters since the beginning of the program. Of the
total funds expended, 18.2 per cent were spent in Fresno
County from May 4, 1938, to May 31, 1939.

EXTENSION OF MEDICAL ACTIVITIES TO ARIZONA

During the latter part of September 1938 the asso-
ciation's program was extended to the state of Arizona.
A branch regional office was established at Tempe,
Ariz., and six district offices were established in the
towns of Buckeye, Phoenix, Avondale, Coolidge, Chan-
dler and Yuma.

From the beginning, the district offices in Arizona
were operated as diagnostic and treatment centers rather
than referral offices and were staffed with nurses instead
of medical-social workers.

THE ESTABLISHMENT OF THE DIAGNOSTIC AND TREATMENT CENTER TYPE OFFICE IN CALIFORNIA

The use of diagnostic and treatment centers under
the direction of nurses proved satisfactory in Arizona
and it was determined to convert the referral type
offices in California to the diagnostic and treatment
center type. Existing clinics had already been built
in the Farm Security Administration labor camps in
Brawley, Shafter, Arvin and Farmersville. The Farm
Security Administration turned over to the association
these clinics, together with all equipment. The associa-
tion then provided additional equipment as needed and
a full supply of drugs to be used and dispensed in the
clinics. The nurses in charge are able to do minor
dressings at their own discretion, and doctors chosen
by the county medical society serve each morning in
the diagnostic and treatment centers. They care for
those types of minor ailments which can be easily
handled in the clinic. A list of physicians for referral
purposes is still maintained for patients needing service
beyond the scope of the clinic.

THE NUMBER OF PERSONS SERVED, CARED FOR, AS OF MAY 31, 1939, AND THE NUMBER OF PHYSICIANS, DENTISTS, HOSPITALS AND DRUGGISTS RENDERING SERVICE

The number of migratory workers and members of
their families served from the inception of the program,
both in California and in Arizona, are given in table 1.

The total amount of money expended since the incep-
tion of the program in May 1938, including the com-
mitments through May 31, 1939, is \$952,597.97, of
which \$754,238.70 was expended in California and
\$198,359.27 was expended in Arizona.

During the period of operation until May 31, 1939,
there has been a total of 900 physicians serving the
association members, 750 of whom are in California and
150 in Arizona. Approximately 150 dentists serve the
association, 100 of whom are in California and fifty
in Arizona. A total of 150 hospitals have been used
by the association members, 100 of which are in Cali-
fornia and fifty in Arizona. Eight hundred and eighty
druggists are on the panel of the association, 700 of
whom are in California and 180 in Arizona.

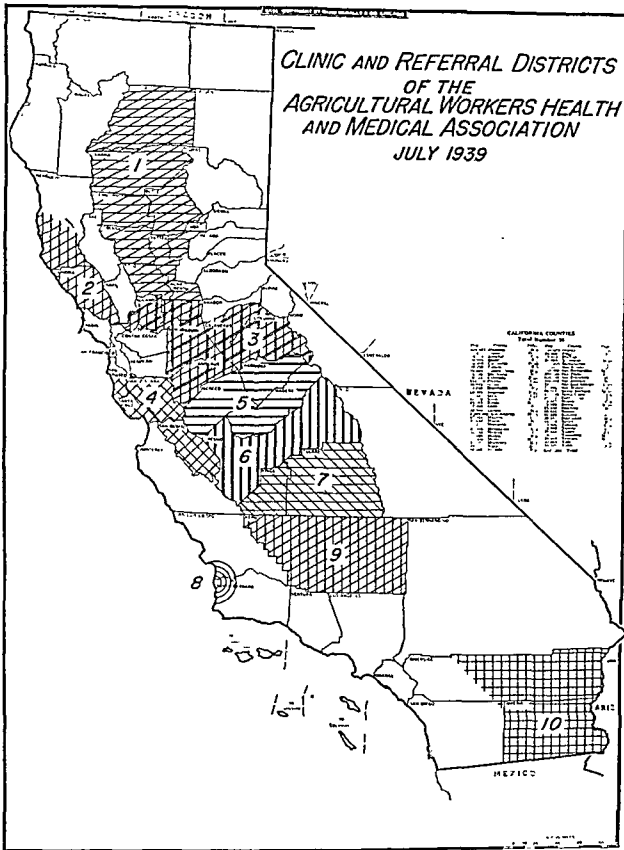


Fig. 3.—The areas comprised within the several districts in California in which the Agricultural Workers Health and Medical Association provides medical care to migrant workers and their families. The counties and types of services in these counties are:

1. Marysville District—Headquarters: Marysville		Service
County	Location	
Butte	Gridley Labor Camp	Referral
Shasta	Redding	Referral
Glenn	Red Bluff	Referral
Colusa	Colusa	Referral
Yuba	Marysville Labor Camp	Referral
Sutter	Yuba City	Referral
Yolo	Winters Labor Camp	Referral
North Sacramento	Roseville	Referral
2, 4 and 8. San Jose District—Headquarters: San Jose		Service
Santa Clara	San Jose	Referral
Sonoma	Santa Rosa	Referral
Mendocino	Santa Rosa	Referral
San Mateo	San Jose	Referral
Santa Cruz	San Jose	Referral
San Benito	Hollister	Referral
San Luis Obispo	San Luis	Referral
Santa Barbara	San Luis	Referral
3. Stockton District—Headquarters: Stockton		Service
Solano	Fairfield	Referral
South Sacramento	Sacramento	Referral
San Joaquin	Stockton	Referral
Calaveras	Stockton	Referral
Tuolumne	Stockton	Referral
Stanislaus	Modesto	Referral
5. Chowchilla District—Headquarters: Chowchilla		Service
Merced	Merced	Referral
Mariposa	Merced	Referral
Madera	Chowchilla	Referral
6. Fresno District—Headquarters: Fresno		Service
Fresno	Fresno	Referral
7. Tulare-Kings District—Headquarters: Farmersville Labor Camp		Service
Tulare	Farmersville	Clinic
Kings	Hanford	Referral
9. Kern District—Headquarters: Bakersfield		Service
Kern	Arvin	Clinic
Kern	Shafter	Clinic
10. Riverside-Imperial District—Headquarters: Indio Labor Camp		Service
Riverside	Indio Labor Camp	Clinic
Riverside	Beaumont Labor Camp	Clinic
Imperial	Calipatria Labor Camp	Clinic
Imperial	Brawley Labor Camp	Clinic

The price schedule adopted for the druggists was similar to that already in operation by the State Relief Administration. This schedule was found not to be entirely satisfactory and in July 1938 a new schedule and agreement was submitted to the secretary of the California Retail Drug Association. The new schedule was approved by the secretary of the California Retail Drug Association and was put into use about the first of August 1938.

TABLE 1.—Families and Persons Served

	California	Arizona	Total
Families from May 4, 1938..	8,067	3,154	11,221
Persons from May 4, 1938...	16,413	6,230	22,643
Members from May 4, 1939...	8,173	3,328	11,501

Almost all of the druggists in all districts agreed to serve the association members.

GENERAL SCOPE OF OPERATION

A medical adviser was appointed in October 1938 with instructions to prepare standards of service to apply to acute and emergency needs only.

A new fee schedule was revised and made effective in March 1939 for both California and Arizona. The fees now set are less than compensation fees, since compensation fees are based on active industry and employment, with a profit factor in the insurance pro-

history form was made, so that unusual service demands might be referred to the medical adviser and kept under his control.

Early in the program it became obvious that chronic diseases such as nutritional disorders, glandular defi-

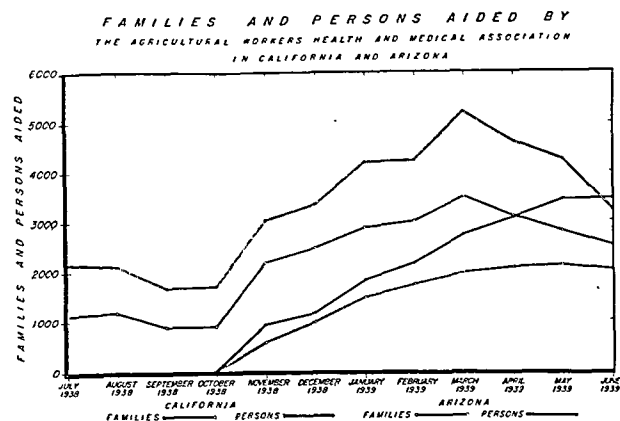


Fig. 5.—The number of families and persons aided by the Agricultural Workers Health and Medical Association in California and in Arizona by months from July 1938 to June 1939.

ciencies, degenerative diseases and chronic infections were creating excessive demands for services. Many of these chronic conditions were becoming disabling, rendering the man unemployable or making it impossible for the mother to care for her family. An attempt was made to expand the program enough to relieve these conditions and to care for some of the chronic diseases of childhood.

The association's records show that a wide variety of services have been rendered to migrant workers. This care has ranged from the management of communicable diseases to the treatment of complicated illnesses requiring major surgery. Malnutrition and dietary deficiencies have been fairly prominent among children, but the largest volume of medical care for all ages has pertained to the digestive and respiratory systems. Infections and injuries have also required considerable attention. For the year May 2, 1938, to June 30, 1939, care was given in 1,688 obstetric cases. The membership of the association as of June 30, 1939, was 12,266. Since this membership fluctuated during

TABLE 2.—Services by Age

Age 0-6		Age 6-18		Age 18 and Over	
Treated	Hospitalized	Treated	Hospitalized	Treated	Hospitalized
5,548	966	6,726	1,506	18,913	4,215
Total					
Treated		Hospitalized			
31,187		6,687			

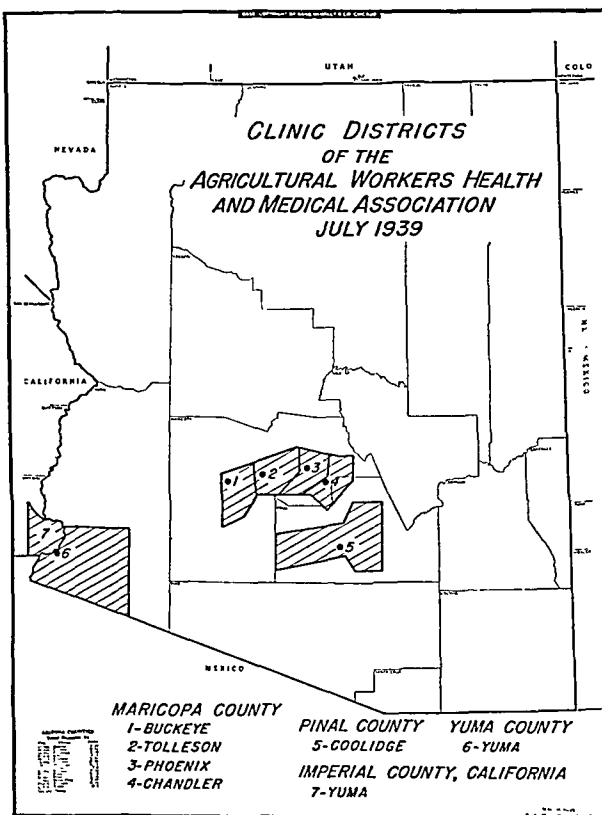


Fig. 4.—The areas comprised within the clinic districts in Arizona in which the Agricultural Workers Health and Medical Association provides medical services to migrant workers and their families.

gram, but an effort has been made to keep the fees for medical services to migrant workers consistent with good medical care.

Problems of medical administration began to appear, and with accumulated experience it became apparent that definite controls had to be established. A short

the year, it is impossible to state from the available information the exact birth rate among these families.

In the opinion of those who are constantly in touch with the demand and supply of medical services to migrant agricultural workers in California and Arizona, the members of the Agricultural Workers Health and Medical Association are receiving medical care which is in all cases equal, and sometimes superior, to that which they would be able to obtain as private patients acting as their own contractors for the services needed. Although the association limits the services which it provides chiefly to the field of emergency medical care, it has frequently been found to be economically sound

to provide medical and surgical care for chronic conditions outside the strictly emergency category. This policy is explained on the ground that the relief of many chronic conditions has lifted heads of families from the unemployable to the employable class, thus enabling them to provide for their families, who otherwise would remain public charges.

TABLE 3.—Amount and Cost of Service

Fractures* (Nine Districts in California)					
No. of Cases	Total No. of Physicians' Visits	Average No. of Visits per Case	Average Physicians' Cost	Average Hospital Cost	Average Cost
54	338	6.3	\$13.58	\$51.05	\$64.63
Obstetrics* (Nine Districts in California)					
No. of Cases	Total No. of Physicians' Visits	Average No. of Visits per Case	Average Physicians' Cost	Average Hospital Cost	Average Cost
127	830	6.5	\$20.48	\$37.80	\$58.28
Tonsillectomies* (Nine Districts in California)					
No. of Cases	Total No. of Physicians' Visits	Average No. of Visits per Case	Average Physicians' Cost	Average Hospital Cost	Average Cost
101	415	4.1	\$23.87	\$16.66	\$40.53
Itemization of Charges					
Physician			Hospital		
Surgery.....		\$15.00	Operating room.....		\$ 5.00
4.1 visits per case.....		5.75	Anesthetic.....		3.00
Incidentals.....		3.12	Ward care (1 day).....		3.75
			Incidentals.....		4.91
		\$23.87			\$16.66
Appendectomies* (Nine Districts in California)					
No. of Cases	Total No. of Physicians' Visits	Average No. of Visits per Case	Average Physicians' Cost	Average Hospital Cost	Average Cost
50	712	14.2	\$73.91	\$70.43	\$144.34
Itemization of Charges					
Physician			Hospital		
Surgery.....		\$50.00	Operating room.....		\$15.00
14.2 visits per case.....		18.50	Anesthetic.....		6.00
Incidentals.....		5.41	Assistant.....		12.50
			Ward care (8 days).....		30.00
			Medications.....		6.93
		\$73.91			\$70.43
Prescriptions Issued to Families and Individuals (Ten Districts in California)					
Number Issued	Number Families	Number Persons	Average per Family	Average per Person	
2,409	871	1,601	2.7	1.4	
Average Cost of Prescriptions (Ten Districts in California)					
Number of Prescriptions		Total Cost	Average Cost		
2,409		\$2,822.32	\$1.17		

* These tabulations are actual, as they were compiled from paid invoices.

The association's records afford some interesting and valuable data pertaining to the medical services that have been provided.

From May 2, 1938, to July 31, 1939, the Agricultural Workers Health and Medical Association provided services to nearly 38,000 migrant workers and their families. The distribution by age and services, as recorded in the diagnostic report for July 1939, is given in table 2.

A few of the statistics pertaining to the quantity and costs of services are available.

During September 1936 the amount and cost of services rendered to the association members for certain medical needs are as given in table 3.

The Agricultural Workers Health and Medical Association has used two methods of distributing medical services to its members. In California the migratory workers and members of their families who apply for medical care are referred, for the most part, to physicians who have indicated their willingness to participate in the association's program. Recently the association has changed its policy with respect to the method of providing medical services, and there is now an increasing trend toward clinic service rendered in clinics established at the several district offices, supplemented where necessary by referrals to physicians in their private offices.

In Arizona the largest part of the medical services have been rendered, from the beginning of the program, in clinics established at the headquarters of the several districts. In some instances it is necessary to request physicians to visit workers or members of their families at their places of abode. It is the policy of the association to limit the salaried physicians who serve at the clinics to the clinic care of ambulatory patients. Whenever home calls or hospital care is needed, such patients are referred to physicians not on the clinic service.

It is reported by physicians in Arizona and the administrative staff of the association that the Arizona method of distributing medical services has been satisfactory.

The seemingly satisfactory clinic arrangements in Arizona probably account for a changing policy in California from the referral to a clinic basis. It is reported that the county medical societies in the areas in which services to the association's members are required have indicated a preference for clinics instead of referrals to physicians' offices.

Good medical care for ambulatory patients is possible under either clinic or private office conditions, provided necessary facilities are available and requirements are not imposed in a clinic that would modify the procedures and judgments customary to a physician's private office. Any system of medical care financed by tax funds is likely to be accompanied by rules, regulations, restrictions and procedures that tend to influence professional judgment and hence the quality of medical care. For example, if the salaried nurses and social workers are permitted or directed to indicate to physicians the length of time they are to devote to the diagnosis or treatment of patients' illnesses, the accuracy and completeness of the physicians' services may be modified to conform to the regulations. Physicians who resist such attempts to direct their practice may soon fall into disfavor, notwithstanding the fact that it is the patient who suffers from such regulatory procedures. If all medical care is forced into a mechanical assembly line technic of a minimum number of persons that must be served in a unit of time, the result will be a deterioration of the quality of the service. Physicians should not be compelled to serve under pressure or surveillance by a corporation which prevents them from utilizing their best efforts in behalf of their patients. Moreover, the clinic method of distributing medical services may tend to encourage the use of medical or surgical procedures which actually require hospital facilities.

The payment for good medical services cannot be based solely on time or quantity standards. The skill of the physician and the results obtained are important factors to the patients who look to their association for quality as well as quantity in the protection or restoration of their health.

The clinic, as compared with the private office method of distributing medical care, creates difficulties in the care of those patients who are unable to come to the clinic. Clinic records are usually not available to the physician who makes a home call, unless the clinic physician renders the home as well as the clinic service.

The Agricultural Workers Health and Medical Association has been liberal in meeting requirements for special articles of diet prescribed by physicians, but no satisfactory method has yet been found to handle prepared infant feeding formulas during hot weather. The conditions under which hundreds of these families live makes refrigeration for each family impracticable, and no central refrigeration system for all the families in the numerous groups or camps seems to have been developed.

Environmental and domiciliary conditions present wide variations. Some families exist near the roadside with only a tattered tent for a shelter. Irrigation ditches in some instances may be the source of water for drinking and cooking; these ditches may also carry away sewage and are used sometimes for bathing purposes. Contrasted with these conditions are a number of camps in which electric lights, modern water and sewerage systems, bath houses, laundries, recreation halls and small wood or steel houses have been installed.

The association is developing a mobile unit of service facilities consisting of an administrative office, a medical office, a power unit for electricity and hot water, a bath house and a supply unit. These units are specially constructed trailers that can be moved to any migrant concentration in lieu of similar permanent installations. This development is in the experimental stage and is therefore undergoing considerable modification as a result of actual experience.

Aside from their strictly medical needs, this migrant population presents problems in public health and education vastly different from those of the stabile residents. Since these families are moving frequently, communicable diseases may be easily spread from one to another section of the state. Children of the migrant families are unable to attend public schools continuously for more than a few weeks in any one place.

The director of public health in California has made an effort to extend to the migrant population many of the facilities for health protection that are available to the stabile residents of the state. The State Department of Education has provided educational facilities that move with the groups of migrants as they follow the crops.

Reports from responsible sources indicate that the migrant population in the West is to a high degree law abiding and desirous of becoming self supporting.

The officers of the Agricultural Workers Health and Medical Association recognize that the plan adopted for its members is something of an experiment. Many changes have been made in the manual of procedures, and conferences to discuss policies and procedures are held with the professional groups in the several districts. The board of directors and the administrative officers have endeavored to confine their activities to fiscal policies and to place responsibility for the conduct of medical services on the medical and dental professions. A fairly generous amount of funds has been made available by the Farm Security Administration for the association's medical program. Time will demonstrate the practicability of this type of medical relief and the changes that may be needed to maintain and advance the quality of medical and health protection for the migrant group of the general population.

APPENDIX 1

ARTICLES OF INCORPORATION OF AGRICULTURAL WORKERS HEALTH AND MEDICAL ASSOCIATION (A Non-Profit Corporation)

KNOW ALL MEN BY THESE PRESENTS:

That we, the undersigned, have this day voluntarily associated ourselves together for the purpose of forming a non-profit corporation, pursuant to Article I, Title 12, Part 4, Division First, the Civil Code of California.

ARTICLE I

The name of this Association shall be the AGRICULTURAL WORKERS HEALTH AND MEDICAL ASSOCIATION.

ARTICLE II

This Association does not contemplate pecuniary gain or profit to the members thereof, and is organized and exists as a non-profit cooperative association without capital stock, pursuant to the laws of the State of California, and the objects and purposes for which it is formed are:

- (1) To associate its members together for their mutual benefit and to further the rehabilitation of said members, and to maintain and safeguard the health of its members, and to that end to engage in any activity involving or relating to the obtaining for its members of medical and dental treatment and services and any surgery, nursing or hospitalization, and medical and surgical supplies and appliances, and such other services and supplies as may be incident, necessary or convenient to the preservation and protection of the health of the members of this Association.
- (2) To borrow from the Farm Security Administration of the United States Department of Agriculture or any Federal or State agency and from any other source or sources, money, goods or services necessary or convenient to the accomplishment of the purposes of this Association, and to draw, make, accept, endorse, execute and issue promissory notes, drafts, bills of exchange, warrants, bonds, debentures and other negotiable and non-negotiable instruments and evidences of indebtedness, and to secure the payment of any thereof and the interest thereon by a mortgage on, pledge, conveyance or assignment in trust of the whole or any part of the property of this Association, and to make loans, and to make provision for the payment of and to pay bills for services rendered and supplies furnished to its members by physicians and dentists duly licensed to practice medicine or dentistry in the State of California or in such other states in which this Association shall qualify to do business, or by other individuals or corporations rendering services to or supplying property to its members, such provision for payment to be made upon the terms and conditions set forth in the "By-Laws," and to take from members notes or other evidences of indebtedness for services rendered or supplies furnished to them.
- (3) To act as the agent or representative of any member in any of the above mentioned activities.
- (4) To acquire, hold, own and exercise all right of ownership in, and to sell, transfer or pledge shares of the capital stock or bonds, or become a member or stockholder of any corporation or association.
- (5) To lease, acquire by gift or bequest, buy, hold, own and exercise all privileges of ownership over such real or personal property as may be necessary or convenient for the conduct and operation of any of the business of this Association, and to cooperate with any public or private agencies whatsoever in the purchase, construction, equipment, operation, maintenance and supervision of any undertaking of this Association designed to effectuate any of the purposes herein set forth.
- (6) To establish reserves and to invest the funds thereof in stocks and bonds of any corporation or in such other property as the Board of Directors may deem satisfactory.
- (7) To levy assessments in the manner and in the amount as may be provided in the "By-Laws" of this Association.
- (8) To do each and every thing necessary, suitable or proper for the accomplishment of any of the purposes or the attainment of any one or more of the objects herein

enumerated and conducive to or expedient for the interest or benefit of the Association, and contract accordingly; and in addition, exercise and possess all powers, rights and privileges necessary or incidental to the objects and purposes for which the Association is organized or to the activities in which it is engaged; and, in addition, to possess the powers, rights and privileges of corporations organized under the general laws of the State of California, except such as are inconsistent with the express provisions of Article I, Title 12, Part 4, Division First, the Civil Code of California.

ARTICLE III

The principal office for the transaction of business for this Association shall be in Fresno County, State of California, but the Association may maintain offices and places of business in such other places within or without the State of California as the Board of Directors may determine.

ARTICLE IV

The existence of this Association is to be perpetual.

ARTICLE V

The private property of the members of this Association shall not be subject to the payment of corporate debts.

ARTICLE VI

Upon dissolution, the property of this Association shall be distributed as provided in the By-Laws.

ARTICLE VII

Section 1. The persons signing these Articles of Incorporation shall be deemed members of the Association immediately upon the completion of its organization, but shall not be entitled to receive any of the benefits of membership in this Association, and provided further, that the members of the Board of Directors and such other persons as may be designated by the Administrator of the Farm Security Administration of the United States Department of Agriculture to perform administrative and supervisory functions in accordance with the provisions of the "By-Laws" or otherwise may be admitted to membership without meeting the membership qualifications hereinafter set forth, but shall not be entitled to receive any of the membership benefits in this Association.

Section 2. Pursuant to the terms and conditions prescribed in the "By-Laws," this Association shall admit as members only such persons as are low income farm owners, farm tenants, share-croppers, farm laborers, drought refugees, or persons who, when last employed, obtained a major portion of their livelihood from agricultural, horticultural, viticultural, forestry, dairy, livestock, poultry, bee or farm operations.

Section 3. New members may be admitted to membership in this Association under the terms and conditions prescribed in its "By-Laws" and upon their admission to this Association shall be entitled to vote and to share in the property of the Association equally with old members. Membership in this Association shall be evidenced by a "Certificate of Membership," the form, terms and conditions of which shall be as provided for in the "By-Laws." Such "Certificates of Membership" shall not be assignable or transferable except as may be expressly provided in the "By-Laws." Each member shall be entitled to but one vote and there shall be no voting by proxy.

Section 4. Assessments against members shall be as fixed in the "By-Laws" of the Association.

ARTICLE VIII

The names and addresses of the persons who are to act in the capacity of Directors until their successors are elected are:

NAME	ADDRESS
KARL L. SCHAUPP, M.D.	490 Post St., San Francisco
W. R. P. CLARK, M.D.	State Bldg., San Francisco
ALBERT E. LARSEN, M.D.	Russ Bldg., San Francisco
JONATHAN GARST	85 Second St., San Francisco
OMER MILLS	85 Second St., San Francisco
ROBERT J. GRAVES	85 Second St., San Francisco
RALPH W. HOLLENBERG	85 Second St., San Francisco

The number of persons named above shall constitute the number of Directors of the Association until changed by an amendment of the "By-Laws" increasing or decreasing the number of Directors as desired.

ARTICLE IX

This Association reserves the right to amend or change or repeal any provisions contained in these Articles of Incorporation in the manner now or hereafter prescribed by statute, and all rights conferred upon the members herein are granted subject to this reservation.

ARTICLE X

The "By-Laws" of this Association shall be adopted by the Directors named in the Articles of Incorporation and may thereafter be amended or repealed by any means provided in the "By-Laws."

IN WITNESS WHEREOF, the persons who are to act in the capacity of the first Directors of the Association have hereunto set their hand this 3rd day of March, 1938.

[s] KARL L. SCHAUPP
[s] W. R. P. CLARK
[s] ALBERT E. LARSEN
[s] JONATHAN GARST
[s] OMER MILLS
[s] ROBERT J. GRAVES
[s] RALPH W. HOLLENBERG

STATE OF CALIFORNIA }
City and County of San Francisco } ss

On this 3rd day of March, 1938, before me, Marguerite G. de Neuf, a Notary Public in and for the City and County of San Francisco, State of California, personally appeared Karl L. Schaupp, M.D., W. R. P. Clark, M.D., Albert E. Larsen, M.D., Jonathan Garst, Omer Mills, Robert J. Graves and Ralph W. Hollenberg, known to me to be the persons whose names are subscribed to the within instrument and acknowledged that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

MARGUERITE G. DE NEUF

Notary Public in and for the City and County of San Francisco, State of California.

My commission expires: October 24, 1940.

APPENDIX 2

CALIFORNIA AND ARIZONA DIAGNOSTIC REPORT,

MAY 2, 1938, TO JUNE 30, 1939

Diagnosis	Age 0-6		Age 6-18		Age 18 and Over		Total	
	Treated	Hospitalized	Treated	Hospitalized	Treated	Hospitalized	Treated	Hospitalized
Malformation.....	27	2	11	..	18	..	56	12
Allergy.....	17	..	35	4	59	3	111	..
Blood diseases.....	12	3	38	1	134	4	184	8
Bones and cartilage diseases.....	7	2	18	9	61	27	86	38
Bursae.....	11	3	6	2	8	1	25	6
Circulatory system.....	1	..	31	2	482	79	514	81
Deficiency.....	773	45	426	8	1,497	20	2,696	73
Digestive.....	777	114	1,102	174	4,517	661	6,396	919
Ear.....	330	49	179	19	179	18	653	86
Endocrine and spleen.....	11	1	38	..	122	22	171	23
Eye and adnexa.....	182	16	32	22	1,155	26	1,519	61
Hernia.....	27	11	32	10	130	63	189	93
Infections.....	513	71	666	87	1,421	263	2,690	426
Joints.....	2	1	20	3	269	31	291	35
Lymph system.....	3	..	21	5	38	5	62	10
Metabolism.....	3	1	12	7	46	10	61	18
Mental.....	1	..	5	..	56	4	62	4
Miscellaneous.....	27	16	34	23	135	76	195	115
Muscle, fascia and tendon.....	18	1	72	4	297	14	357	19
Nervous system.....	21	7	39	8	266	18	314	23
Parasites.....	92	..	90	1	82	1	264	2
Poisoning.....	22	4	13	1	31	11	67	16
Sex dysfunction.....	..	..	22	2	293	19	245	12
..	3	..	4	1	41	13	43	14
..	2	..	51	11	879	270	965	241
..	114	44	45	15	137	27	297	66
Respiratory.....	1,623	459	1,562	731	1,919	528	5,299	1,738
Skin, hair and nail.....	261	6	215	14	484	11	691	31
Urinary organs.....	66	11	102	10	767	141	875	162
Tumors.....	3	..	22	9	247	113	272	122
Obstetric.....	..	..	182	131	1,596	1,247	1,658	1,378
Newborn disease.....	21	14	1	..	..	..	32	14
Injuries to special organs.....	315	54	542	124	749	218	1,666	266
Examination only.....	69	..	70	2	241	2	250	4
Totals.....	5,241	925	6,546	1,462	15,184	4,612	29,071	6,477

This table is taken directly from the June 1939 monthly report of the Agricultural Workers Health and Medical Association. It indicates the number of persons who received treatment and who were hospitalized from a total of 23,679 persons given assistance by the association during the fourteen month period ended June 30, 1939. Some of the diagnoses that are listed are not altogether clear, but a complete clarification

would require an entire check of the records of the association.

The classification of the diagnoses refers in most instances to anatomic locations or systems and does not give exact pathologic diagnoses.

The chart does, however, give a general index of age incidence within broad age groupings and indicates the number of persons who were hospitalized.

ANNUAL CONFERENCE OF SECRETARIES OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

Held in the American Medical Association Building, Chicago, Nov. 17-18, 1939

(Continued from volume 113, page 2430)

Address by Nathan B. Van Etten, President-Elect of the American Medical Association

DR. NATHAN B. VAN ETTEN, New York: Based on my own experience and inclination, and an amazing amount of testimony from every part of the country, I believe that the time has arrived when organized medicine must step out from its conservative shell. Its objectives must be interpreted in no uncertain language, not only to its own membership, but to all the American people. The practice of medicine is threatened with national political control. This threat comes not only from amateurs such as those who style themselves doctors of the philosophy of public health, who cannot know medical practice because they have never practiced it, but from health officers holding medical degrees who have either forgotten or never knew real service to sick individuals. Representation of these groups have only recently, before large public meetings, reviled the American Medical Association by accusing it of the crime of hypocrisy because it still desires as much individual service to sick people as is compatible with their best interests—because it still works through its own councils every day for better medicine than the day before and because it honestly desires a fair deal for all American doctors. These speakers declared themselves unreservedly for a complete system of government medicine not only preventive but curative.

The great majority of those who comprise the federation of American Medicine disbelieve in such proposals and will fight for their own objectives, which they believe will conserve the best interests of all our people. The private practice of medicine has such public consequences that government umpiring and government assistance may be necessary, but the practice of medicine by government is most undesirable. Government practice would act in restraint rather than in promotion of incentive or opportunity.

The American people will determine through expression of opinion what kind of medicine they will have. The secretaries and editors must influence that opinion toward what they believe will be the best kind of medicine. People vote for what they believe is best for their pocketbooks. Very few budget for anything except for rent and heat and light. Budgeting for health is rare. Health is a gamble and means little until it is lost. No government regulation will prepare people for the tragedies of sickness any more effectively than regulation within the family unit. It might make them even more careless through the consciousness of a protecting paternalism. There is a concerted drive for general service in sickness supported by taxation, which, of course, involves government control. Something better must be offered which will meet the demand of the ordinary man for medical service which shall be available and within his means.

I believe that any new program for medical service should develop from the periphery toward the center. I believe that all health operations should work from the school district to the township—to the county—to the state—to the federal authority in that order and that federal authority should be used as infrequently as possible. I believe that every local ability to furnish medical care should be explored and should be employed before government aid is requested. I believe that we should develop objective plans along these lines. I believe that we should work for centralization of all federal health agencies except those of the Army and the Navy in one organization such as a National

Health Department. I believe that medical care of the economic indigent is the problem of the taxpayer. The economic indigent may be defined as a person who is unable to provide the necessities of life for himself or his family. I believe that the medical care of the medical indigent is the problem of the taxpayer. The medical indigent may be defined as a person who cannot pay for medical care without sacrificing the necessities of life for himself or his family. I believe that the medical care of these members of society should be administered by the medical profession, who should be paid for this work by the taxpayer. I believe that the problems of low income groups who are able to care for ordinary but not for catastrophic sickness should be shared by the medical profession and the taxpayer. I believe that hospital and clinical service facilities should be extended in every direction where they are needed. I believe that serious efforts should be made to remedy the failures of the distribution of medical care to sections of our country where there may be groups of neglected people. I believe that projects for the extension of medical care should be developed no faster than personnel can be trained to make them effective.

You have heard the statement of the Trustees this morning carrying eight objective principles, which had the full authority of the House of Delegates at the St. Louis session. Using these points as basic, I believe that we should try to find an American way to develop the sound objectives of an American health program and I hope that the secretaries and editors of the American Medical Association will promote it to the limits of their ability.

MEDICAL SERVICE PLANS OF STATE AND COUNTY MEDICAL SOCIETIES

Program for Distribution of Medical Care in New Jersey

MR. NORMAN M. SCOTT, New Jersey: A program fitted to New Jersey should, of necessity, consist of two efforts: one a plan for the medically indigent and one a plan for the so-called low wage group. Plans to fit both of these economic classes are in process of preparation in New Jersey and are progressing nicely. Today, we have to do with the low wage group. Is this plan insurance? When the committee started its deliberations it got in touch with the Commission of Banking and Insurance, which was friendly and cooperative. It outlined certain lines of procedure which it thought would help us and which we might follow, and the committee proceeded along those lines.

Last July our legal advisers who attended this meeting advised us that this was not insurance, that we could incorporate under the law allowing for the incorporation of corporations not for pecuniary profit, and that if under that corporation not for pecuniary profit we wished to assist in the distribution of medical care, that was our privilege. We proceeded along that line. We presented the material to the house of delegates last June, and we incorporated as a nonprofit corporation. In August came word from the Commissioner of Banking and Insurance that the interpretation of our effort by the commission was that under state law this was an insurance effort; that if we went into operation the commission would be forced to take action against us to determine in the courts whether it was justified in assuming that position and to force us under the Commission of Insurance and to force us under new enabling

legislation. But our legal advisers still insisted it was not insurance. In the back of our pamphlet I have put in a short digest of the two opinions.

So it went back and forth for two or three months. As matters crystallized, we concluded that we were just a guinea pig to solve an academic problem in which we were not interested. If we wished to solve this problem as to whether we were legally undertaking insurance or not, it would require all the capital funds we had, which had been allotted to us by the state, and would delay us one or two years. It was settled at a special meeting of the board of trustees on November 5. Our legal advisers said we presented it to the house of delegates not as an insurance effort; therefore we were departing from the powers vested in us by the house of delegates. The second question raised by the law was that we were exceeding the powers granted us. The board of trustees then upheld what we had done and granted permission to proceed with any other effort which would speed the accomplishment of this plan.

So we are operating the plan under the jurisdiction of the Commission of Banking and Insurance and discarding the academic question of whether or not it is insurance. It would cost us too much to find out. There are definite advantages in going under the jurisdiction of the Commission of Banking and Insurance. It protects us from rackets which might be troublesome. It protects us against any other organization starting a similar plan in the state.

We prepared two or three tentative drafts of an act. We got it finally in shape and it has gone to our lawyers now. We hope to put it through early in the session of the legislature as a noncontroversial bill allowing for the operation of medical service plans under the jurisdiction of the Commission of Banking and Insurance.

Another question is the fee schedule. In the early months of the development of this plan we spent many weeks discussing fee schedules, collecting fee schedules and trying to make up fee schedules. I do not think that fee schedules have ever been popular in New Jersey. We could find only one from a county medical society and it had pigeonholed it. After long discussion and the examination of many fee schedules we came to the conclusion that this could not be a success and be based on actuarial figures. We could not determine what actuarial figures would apply, and we adopted the philosophy that the services of a physician to a patient were too intangible, too individualistic to be given any fixed monetary value. So from that we evolved the system which we wish to apply with regard to fees in this plan.

In each county in which this plan operates there will be an advisory committee, similar to the plans of all the states. It will be the duty of this committee to review the bills submitted by the physicians. That will not be a tremendous task. We shall have a limited fee schedule, we think now, which allows \$1 for an office call and \$2 for a house call. Perhaps there will be 10 per cent of the bills for special procedures which the committee will have to review. The amount actually paid the physician will depend on the decision of this committee and the amount of money available in the headquarters. The amount paid the physician will be determined after considering the amount available and the usual price charged that particular type of individual for that particular type of service in that particular locality.

We shall give these advisory councils a skeleton fee schedule to guide them. They know they won't pay \$250 for an appendectomy. They might consider, under certain circumstances, they would pay \$100, and when it is actually paid they will pay \$50; but there will be nothing fixed about it. The physicians participating must agree to abide by the decisions of that committee. I think there is no doubt that in every county there are many men who can be appointed as a group to review these bills in whom the profession has faith and in whom they have sufficient trust that they will accept the decision of the committee on the amount of money which will be paid to them for their services. If we do not have that type of cooperation from the medical profession, and if we cannot depend on the integrity and the cooperation of the medical profession, naturally the plan will fail. Perhaps, after more definite experience, we can put it on a more fixed actuarial basis, but that will be

the start, and that, like all other phases of the plan, is purely experimental. While we shall operate on a state charter, the plan will be instituted in one or possibly two counties and then spread as we learn by experience.

Michigan Medical Service

DR. L. FERNALD FOSTER, Bay City, Mich.: The Michigan State Medical Society recently gave endorsement to the medical service plan "Michigan Medical Service," which has been developed after nine years of careful study.

Michigan Medical Service is a voluntary nonprofit group medical care corporation organized under special enabling legislation (Act 108 of 1939) passed by the Michigan legislature under the sponsorship of the Michigan State Medical Society. Subscribers to this medical service plan will be entitled to designated medical services from doctors of medicine. The purpose of Michigan Medical Service is to assist residents of Michigan, particularly those in the low income group, to obtain the services of doctors of medicine by providing for medical services in return for small monthly subscription payments.

Almost a decade of surveys and studies by the Michigan State Medical Society at a cost of more than \$30,000 has indicated convincingly that the primary problem is the economic inability of certain classes of the population to utilize the medical services and facilities available. Consequently the Michigan State Medical Society recognized the need for some means to assist these persons to make use of necessary medical services.

For an understanding of the plan itself, the following outline indicates the fundamental principles:

Administration.—Michigan Medical Service will be administered by a board of directors consisting of from eleven to thirty-five representatives of the public and the medical profession. The articles of incorporation of Michigan Medical Service have already been certified by the attorney general. The Michigan State Medical Society has advanced the necessary working capital. The plan will go into effect in the near future and its operation will be under the direct supervision of the Insurance Department of the State of Michigan.

Membership Requirements.—All employed persons under the age of 65 who can be enrolled in groups of twenty-five or more will be eligible for membership. Experience has shown that group enrolment is a definite requisite, at least during the initial period of operation. Subscribers may enroll their dependents, including the husband or wife and children under 21 years of age. An annual income not in excess of \$2,000 for individual subscribers and \$2,500 for subscribers and their families is tentatively proposed as a membership requirement.

Benefits.—Subscribers to Michigan Medical Service and their dependents will be entitled to receive the following benefits: 1. Medical and surgical care from doctors of medicine of their own choice, including home, office and hospital visits. 2. Consultation services and special medical services such as x-ray, laboratory and anesthesia services performed by doctors of medicine. 3. Obstetric services after membership for a period of twelve consecutive months. 4. Medical services necessary to establish a diagnosis for tuberculosis, venereal diseases, cancer and nervous or mental conditions. The subscribers will be entitled in any one subscription year up to \$325 worth of medical services for individual subscribers, \$550 worth of medical services for husband and wife and \$875 worth of medical services for a family.

Limitations.—There are as few restrictions as possible. However, it is obvious that some limitations are necessary to bring the cost of the plan within the income of the eligible subscribers. The benefits are limited to services of doctors of medicine only. Conditions which are provided for under special legislation, such as workmen's compensation or which existed prior to the date of membership, are not included.

Costs.—The subscription rates proposed for Michigan Medical Service are \$2 a month for individual subscribers, \$3.50 a month for husband and wife and \$4.50 a month for a family. An initial registration fee of \$1 will be charged in the first year only to provide for part of the cost of enrolling members. The actuarial basis of this rate structure has been carefully deter-

mined from the basic sources of information previously indicated. Such data give considerable assurance of stability and if a surplus is accumulated it can be used to lower the subscription rate or to increase the benefits. The employer can contribute part of the cost to help the employee obtain the benefits of this plan. For those persons who are destitute or who are in the very low income group—the indigent or medically indigent—special arrangements may be made with governmental agencies or private agencies for the payment of part or all of the subscription cost. This is specifically a provision of the enabling act.

Medical Service Bureaus in Washington

DR. V. W. SPICKARD, Seattle, Secretary, Washington State Medical Association: The house of delegates of the Washington State Medical Association in August 1933 approved and endorsed the formation of medical service bureaus within the state. The "whereases" of the resolution which was adopted explain clearly the problems which were confronting the physicians of Washington at that time. I will read part of that resolution:

WHEREAS, This association as an integral part of the American Medical Association has for one of its major objects the continuous raising of the standard of professional ability of those who practice scientific medicine; and

WHEREAS, The raising of such standards is becoming increasingly difficult, not only by reason of the present economic conditions, but because certain schemes have grown up in recent years which are making it difficult for physicians to receive adequate rewards for their services; and

WHEREAS, In contract practice as it has developed within the last few years the young doctor has been finding his practice bottled up and the older practitioner has been finding his practice slipping away to men who are not justified in taking that practice by reason of superior professional ability; and

WHEREAS, Every scheme which divides medical practice except in accord with the professional ability of the physician is inimical to the best interest of the profession and the patient as well; and

WHEREAS, Contract practice is one of such schemes and lends itself to the exploitation of the physician by laymen; now therefore be it

Resolved, by the Washington State Medical Association, That we hereby approve and endorse the formation of local medical bureaus within the state of Washington as a proper means of fighting the growth of contract practice and health insurance.

Thus started a movement which has had a profound effect on the practice of medicine in Washington and to a lesser extent in many other states.

Before analyzing the operation of the medical service bureaus, let us look for a moment at the peculiar circumstances in Washington which gave rise to the creation of these bureaus. In the first place, the bulk of industrial activity in Washington is lumbering, fishing and mining. These are relatively hazardous occupations, and the companies normally made a practice of having some physician on hand ready to treat any one who might be injured.

An industrial insurance law was passed in 1917 to make it more certain that the injured worker would receive proper medical care and adequate compensation. There were three methods under this law by which medical care could be made available to the covered employee. One was on the basis of a free choice of physicians paid for by the administrative department from fees collected from the employers and the employees; another was for the company to hire a doctor and to furnish necessary care and hospitalization, and the other method was for the company to contract with some physician or group of physicians to supply this care, the contracting physician providing all necessary drugs, appliances and hospitalization.

Although contract practice had existed in this state prior to the adoption of the industrial insurance act, it received a tremendous impetus under the operation of the act. In communities where the industrial workers constituted the bulk of the practice of the physicians, the competition to secure the contract was intense, often resulting in physicians securing contracts at a figure too low to render adequate care to the covered workers, with a resulting exploitation of such workers. Although under the act the employees are supposed to be permitted to select their contracting doctor by means of ballot, it was charged that often the actual selection rested with the employer, and various means were used to force the employees to accept this choice. It is alleged that some physicians would treat the

employers and their families free of charge and rebate part of the contract money to the employer as a means of securing the contract.

While some of these physicians handling industrial contract work extended the contract to include the families of the workers, still the effects of contract practice were not felt with full force until the period of the depression starting in 1929. As industry after industry closed or curtailed operations, the contract doctor began searching for new business. A number of these physicians had established elaborate clinical facilities and some had even built their own hospitals. The contract doctor started going far afield to secure new contracts. Whereas previously this type of practice had been confined chiefly to large industrial units, the employees of small businesses were offered contracts for medical care. Contract physicians in many cases would move into a community, sell most of the population on a prepayment plan and then give the local physician the unhappy alternative of hiring out to the contract group at a low salary or seeing his practice disappear to physicians who would be brought in from the outside. As the depression grew, many doctors who had never previously been interested in contract practice started considering the possibility of organizing contract schemes of their own to meet the vicious competition. By 1932 and 1933 various proposals were being worked out with the insurance companies to blanket the state with a form of health insurance which contemplated offering salaried positions to most of the physicians. This was the background which led up to the adoption of the resolution by the house of delegates in August 1933.

Medical service bureaus had existed in Washington since pre-war days. The Pierce County Industrial Medical Bureau, still in existence, was the first to be organized. A similar bureau was in operation in King County, which includes the city of Seattle, from 1917 to 1925. These bureaus were organized primarily to contract for state work, guaranteeing the workers who belonged to the bureau a free choice of physicians.

A bureau of the present pattern was organized in Yakima County in 1931. In May 1933 the King County Medical Society was instrumental in organizing a King County Medical Service Bureau to compete with existing contract groups and to block a proposal by an insurance company to sell health insurance and to hire physicians to render the necessary medical care. The details of this bureau will be explained later. Other county societies organized medical service bureaus until at one time there were thirteen in operation. In 1933 a state medical bureau was set up to coordinate the work of the local service bureaus, to assist in raising their standards and to cooperate with the state medical association in the solution of those questions which involve the business side of medicine. In a resolution adopted by the 1933 house of delegates the state bureau was instructed "not only to minimize contract practice but to confine it to those individuals whose income is within the lower bracket."

Briefly the structure of a medical service bureau is as follows: The bureau in each locality is directed by the board of trustees elected by and from the physician members of the bureau. A nonprofit corporation is also provided, as a separate and distinct agency, to handle the collection of premiums and the payments to the physicians. The administrative problems of the corporation are turned over to a group of directors selected by the trustees. To supervise the professional services rendered, a physician is appointed as medical director. A manager is chosen to run the office and to establish agreements with employers and employed groups. The original working capital has come normally from initial membership donations of \$5 to \$10 for each participating physician. These donations were later returned in some counties.

Each physician member must enter into an agreement with the corporation by which he authorizes the corporation to offer his services to employed groups, to accept payment for services on the basis of a given fee schedule, services to be paid for either in full or on a proportionate basis. No member of the county medical society is permitted to accept or hold any other contract. Normally there is a minimum enrolment group stipulated in the plan, and a maximum monthly salary is set for individuals who will be covered under the plan.

The rate of the payment made by the employee varies with the individual plans and with the scope of benefits offered.

Services offered vary from full coverage to coverage for acute cases only. Usually such payments are by a check-off system. At the time of sickness the patient may, for general services, choose any physician on the list of participating practitioners. The bureau is responsible for the identity of a subscriber applying for service, and a practitioner is expected to report to the bureau immediately when a patient applies for treatment and when the treatment has been completed.

The attending physician submits voucher and statements of the cost of medical service rendered for each case, summarizing them in a monthly statement submitted to the bureau. Each statement is studied by a medical audit committee which determines, within limits, the suitability of the treatment given. That in brief is an outline of our bureau structure.

I was asked to discuss the actuarial background of the medical service bureau plans. Owing to the circumstances of contract practice previously mentioned, the actuarial factors could receive but little consideration. It was not a question of what was a proper rate to be charged to guarantee adequate compensation to the physician but more a question of what rate the traffic would bear, that is, What was a rate which could be charged the employed worker which would not be out of proportion to the rates being charged by the contract groups?

Some facts relative to the present operation of the bureaus follow. At the present time there are medical service bureau plans in operation in eleven counties, and in two other counties the structure exists but no actual plans are in operation. The state medical bureau itself is relatively inactive, although it was very active in the period from 1935 through early 1938, when medical care for relief clients in this state was administered by the state bureau and handled through the local bureaus. There are now more than 86,000 people covered under contracts with the various bureaus, the number varying from 1,500 in the smallest to 10,000 in Pierce County, 12,000 in Spokane County and 35,000 in King County.

There is wide variance in the type of services rendered by the different plans. In some, complete medical care is given except for venereal diseases and for diseases peculiar to sex. In others, the inclusion is virtually for acute cases only. Drugs are supplied under some plans and not under others. In a resolution adopted by the board of trustees of the state medical association in 1938 a request was made that each bureau divorce the medical care features from other features of the plan, such as hospitalization. To date, no bureau has conformed to this suggestion, believing that selling a plan of medical care alone would place it at a competitive disadvantage with existing groups which offer both medical care and hospitalization at a lower rate than the service bureaus do.

Considerable dissatisfaction has been expressed by many physicians over the hospitalization feature in that the hospitals are paid in full for their services at a rate comparable to that charged private patients for similar services, while the physician has to accept a unit payment on a fee schedule which is usually less than the fees charged to nonbureau patients. Whereas the unit of payment to the physician has not increased materially since the inception of the plans, in some of the bureaus there has been one or more increases of daily allowance made to the hospitals. However, the cost of hospital service to the patient is less than under most group hospitalization plans, partly because of lower administrative costs.

The average premium rate charged the workers varies widely, and it is difficult of exact comparison because of the difference in the medical services being included. The rate varies from \$1.25 to \$2.50 a month by different localities. In some bureaus a different rate is charged for the male and the female worker, and in those which have a complete family coverage a separate charge is made for the worker, his wife and his family. While there has been a gradual increase in average premiums to the present time, in one case from 65 cents to \$1.75 a month, the average unit payment to the physician has not increased proportionately as increased other costs have eaten into the increased premium.

It is believed by some physicians that they are not adequately compensated for the work performed; but the majority seem to feel that the remuneration is fully as much as could be collected from a similar low income group as private patients. The plan is less advantageous to the specialist because he must

accept the same fee as the general practitioner. The general practitioner would be willing for the specialists to receive higher fees provided they would see only those patients referred to them and not patients who choose the specialist directly.

The method by which the physician is compensated also varies widely. In some bureaus the physicians are paid a fixed unit of the charges billed against the bureau for the month. In others the receipts for the month are pooled, administrative, hospital and other fixed charges are deducted, the total amount of all physicians' bills is computed, and each doctor is paid his pro rata share of the net income. Because of the seasonal nature of the work of some physicians who specialize in certain types of work, the latter method has been subject to considerable criticism. That is, a doctor specializing in internal medicine might treat a number of pneumonia cases in the winter months when the total drain on the bureau income is great and yet not treat many bureau cases in the summer months when the unit of payment is proportionately much higher.

In reply to a questionnaire as to the percentage which the physicians receive of their fees charged, answers were received from the eleven bureaus ranging from "50 per cent of the liberal fee schedule" to "100 per cent of the schedule." Because of lack of comparative information regarding schedules, it is not known whether this 50 per cent payment results in as much actual money to the physician per case as the 100 per cent payment. An incomplete analysis shows, however, that between 60 and 70 per cent of the income of the various bureaus is disbursed to the participating physicians.

Three of the bureaus are now experimenting with family contracts. In one the rate for the employee is \$1.75 a month, and \$1.75 for the wife and for each child. In another the family rate is \$2.25 a month exclusive of the head of the house. The latter plan has been a definite failure for the first six months of operation and is now in the process of another six months' trial. The other bureau has more than 300 families under contract with a rate of \$1.75 for the employee, \$2 for the women and from 75 cents to \$1 for the children. The managers of the other bureaus state that there is much pressure being brought to force them to take family contracts but that they do not propose to do so.

Medical service agreements for industrial insurance cases are drawn up between the employers and some of the medical service bureaus under the supervision of the state department of labor and industries. Two separate systems are in operation for payment to the physician for such state work. In King County the physician doing this work receives only the same unit as is paid for other bureau cases. In Spokane County, however, the physician is paid 100 per cent of the departmental fees for state work and receives a unit payment for all other bureau cases. Most bureaus are contemplating giving up their state contracts for one reason or another.

This rather rambling discussion has been designed to show the extent of the experience and the experimentation which has been carried on in our medical service bureaus. It has not been an attempt to compare the various plans in operation, as they differ too widely in coverage, premium rate and fee schedule to permit exact comparison. For the remainder of the time allotted I propose to explain in slightly more detail the operation of the King County Medical Service Bureau, which is the largest and one of the oldest bureaus in operation in the state of Washington.

The King County Medical Society appointed a committee to study the advisability of adopting a medical service bureau in March 1933. The next month the society adopted a constitution and a set of by-laws for a King County Medical Service Bureau. The purpose for which this bureau was organized, as stated in the by-laws, was "to cooperate with the King County Medical Service Corporation in securing for low wage earners and their families health services, including the benefits of medical and surgical care and treatment, hospitalization and nursing, of which many such individuals and their families have heretofore been deprived." Eligibility for membership was to include any member of the society eligible for the staff of a standardized hospital, who had practiced medicine in the county for three years. The officers of the bureau consisted of a president, vice president, secretary and two other trustees.

At the same time the county society voted to approve articles of incorporation for a King County Medical Service Corporation, to exist independently of the society. The corporation was not a stock company and the membership was to be limited to subscribers. The management was vested in an elected board of five trustees, who in turn were to select a president, a vice president and a treasurer from their own membership.

The tie-up between the service bureau as an agency of the society and this corporation was effected through a medical advisory board to consist of five members, none of whom were to be members of the board of trustees of the bureau or of the corporation. The chairman of this advisory board was to be the medical director of the corporation. The other four members were to be elected at the annual meeting by members of the bureau. The duties of this board were to handle all matters of dispute arising between members of the King County Medical Service Bureau and the King County Medical Service Corporation.

The payments to any one physician under the original by-laws of the service bureau were to be limited to a maximum of \$3,600 in any year. In May of 1933 this \$3,600 a year restriction was deleted, and it was decided also that members of the society with existing contracts were to be permitted to retain them until termination, at which time the contracts should go to the service bureau.

Contracts for medical care were to be limited to groups of six or more employed persons making \$150 a month or less. The inclusion was broad enough to cover practically all care except chronic conditions, venereal diseases, diseases peculiar to sex, pregnancy, insanity, cancer, tuberculosis and like conditions, and the premium rates varied from \$1 to \$1.50 a month. Circulars listed the benefits available to employees, as medical service, hospital care, ambulance, specialists, first aid and x-ray examination. Free choice of subscribing physician was provided. By the end of the first year of operation the corporation had medical care contracts with more than 15,000 employees, and the gross income for this year was approximately \$82,600.

It was charged in an editorial appearing in the *Bulletin of the King County Medical Society* in October 1934 that "the fees at which this service is sold are too low," and further that "these low fees are upsetting the public valuation of service as applied to private practice." This premium rate of \$1 to \$1.50 had no exact relation to the cost of rendering the service, however, as it was based primarily on a competitive rate with private contract doctors. The majority of the physicians in King County holding private contracts, when confronted with the alternative of relinquishing their contracts or being denied membership in the bureau, eventually gave up their private contracts.

There was a gradual increase in premium rates as the covered employees became more aware of the superior type of care being made available through the facilities of the service bureau as against those of private contract doctors. Certain contract physicians with large staffs still remain in Seattle to the present time and have prevented these rates from being placed on a sound actuarial basis for the type of service which is rendered. The unit payment to the physician has also been increased from the original 50 per cent to a unit of 60 per cent.

At the present time there are approximately 35,000 persons under contract. Because of the fact that the physician does bureau work at a low cost figure the corporation is making no attempt now to increase the number under contract, except that it will normally take groups which have previously been under contract to various private contract physicians. More than 440 of the approximately 600 physicians in the county society do bureau work, and it is stated that every general practitioner in the society is included. The pediatricians, obstetricians and certain other specialists, of course, are not under contract because of the exclusion of their services in the contracts with the employees.

For the year ended May 31, 1939, the service bureau had a total income of more than \$628,000. Distribution of the subscriber's dollar for this period is as follows: available for physicians' services, 70 per cent; hospital services, 18 per cent; administrative expense, 7 per cent; nursing, 2 per cent; medicines prescribed, 1 per cent (that has been eliminated in the last year or so; we are not giving medicine in any of the first

aid contracts); first aid, appliances and ambulance, 2 per cent. Not all of the 70 per cent of the total income available for physicians' services was needed for the 60 per cent unit of the fee schedule now being paid, and approximately \$23,000 of the total available of \$442,000 was placed in reserve. This reserve now, I was told before I left, is about \$50,000. Based on this experience there was recently another upward revision made in the fee schedule; instead of increasing the unit percentage they just increased the fees in the schedule.

As a matter of fact, the entire development of the medical service bureaus in Washington has been on an experimental basis, with the rates, the coverage, and the inclusion of service being sufficiently flexible to permit changes as more experience was obtained. I might say that it is still on an experimental basis and is being revised from time to time, and I think that it will be better revised. Throughout our process of experimentation, however, the service bureaus have adhered to two fixed ideas: the one that, irrespective of the low charge, the highest type of service should be guaranteed to the covered employees, the other that the bureaus should maintain the fundamental right of every man to have a free choice of physician, with no interference by any third party in the relationship of the patient to the physician of his choice.

Formation of Plans in Pennsylvania

DR. C. L. PALMER, Pittsburgh: This opportunity to discuss voluntary insured medical services from the point of view of the Medical Society of the State of Pennsylvania is greatly appreciated. As this subject is one about which limited data and statistics are available and with which there is little practical experience up to the present time, the discussion here today will be the result of experiences regarding the formation of these plans, which experience will no doubt be very similar throughout the states in which these plans are now in the developmental stage. Time does not permit going into the details of all phases of the plan in Pennsylvania. It is to be hoped, however, that much will be brought out in the discussion.

It might be profitable to consider the acts as they are now written on the statute books of the commonwealth of Pennsylvania. With the help of Dr. William C. Woodward, of the Bureau of Legal Medicine and Legislation of the American Medical Association, together with attorneys familiar with bill drafting, constitutional requirements and legislative procedures in Pennsylvania, two bills were drafted which are now acts 398 and 399. During the course of these bills through the legislature a number of different groups became interested. The insurance group, the healing arts group outside the medical profession, political organizations and hospital service associations took a rather active part in attempting to amend or prevent the enactment of these legislative measures.

Act 398 is an amendment to the nonprofit corporation act of 1933 authorizing the establishment, maintenance and operation of nonprofit medical service plans whereby medical services may be provided through any doctor of medicine to subscribers of low income and their dependents. This act provides a special procedure for the incorporation of nonprofit medical service corporations. It provides that nine or more citizens of the state shall be eligible to become directors, the majority of whom must at all times be licensed doctors of medicine. It defines the income group, medical services, persons with dependents and subscribers of low income, and provides for the procedure in obtaining a charter and to exemption, and sets up reserves and the manner of dissolution.

Act 399 provides for the regulation and supervision of these corporations by the department of health and the insurance department. This act makes a declaration of necessity, stating that it is hereby essential that adequate medical services be provided to the residents of the commonwealth for the maintenance of their physical and mental health, especially for persons of the low income group who are unable to provide such services for themselves without depriving themselves or their dependents of the necessities of life while at the same time maintaining the progress of science and art of medicine. It provides that no such corporation shall be formed unless it conforms to this act.

The medical service association may divide medical services into classes or kinds and shall not provide such services to subscribers except through doctors of medicine.

It provides for emergency services to those regularly domiciled within the state and medical services for those living on the borders of the state. All medical services must conform to the best medical practice in the community at the time, but the association shall not be liable for injuries resulting from negligence, misfeasance, malfeasance, nonfeasance or malpractice on the part of any officer or doctor of medicine. The relation between the subscriber and his dependent and the doctor of medicine shall be identical with the relation that ordinarily exists in a community between a physician and his patient. All disputes or controversies shall be disposed of only by doctors of medicine selected in a manner prescribed in the by-laws. It empowers relief officers to make contracts with the organization for the medical care of the indigent, defines supervision by the department of health and the insurance department, has a severability clause in it and repeals, modifies and varies no law now in force relating to the practice of medicine and surgery.

It is the belief of those of us in the Medical Society of the State of Pennsylvania who are familiar with these acts that they are as comprehensive and inclusive as any that can be obtained under present conditions, maintaining as far as possible all the traditions, ethics and principles of the medical profession.

A tentative plan has been drafted which conforms to actuarial principles and legal requirements, which is now under consideration by designated committees of the Medical Society of the State of Pennsylvania. The plan has been sent to officers and members of committees of the various component county medical societies for constructive comments. Constructive comments so far can be divided into several classes:

1. Those which emphasize the individualism so prevalent among physicians. Comments of this classification are such that those physicians attempt to develop barriers of various kinds in order to prevent any form of regulation whether it be governmental corporate or under the supervision of their own profession. These individuals apparently have no desire to be bothered with the details of a study of any plan or be involved in carrying out the mechanics of such a plan. Some suggestions show lack of understanding and a misinterpretation of the plan. Some commentators apparently have the motive of scuttling any plan and from evidence obtainable were prompted by aid proffered by certain selfish interests, such as hospital service associations. It is difficult for these individuals to see the necessity for the medical profession to do anything about this. They have not felt the effects of the gradual encirclement and encroachment on the activities of the medical profession by legislative procedures.

Some think this is the entering wedge for a complete government and political control or socialized medicine. It is very evident to those working with legislation that the entering wedge for socialized medicine was developed a number of years ago.

It can be assumed that this activity on the part of the medical profession will prolong the establishment of government control in this country for an indefinite period and if this should come the mechanics for carrying out such a government plan could be developed under the supervision of the medical profession with the retention to a very large extent of the traditions, ethics and principles of practice as it has existed during the life of this country.

Other comments are sincere and show evidence of careful thought and really suggest constructive changes. It seems very evident that under present changing economic conditions something more must be accomplished to enable the medical profession to take its position in society in general and assume the responsibilities of such a position.

With all these changing opinions and chaotic conditions it seems difficult for the profession to convince political organizations and the general public that the power vested in the medical practice acts and the moral and traditional sentiments expressed in our Code of Ethics to be carried out by medical organizations are adequate to meet the requirements of present conditions. Therefore it seems advisable that something more be done to enable the profession to meet the demands and retain the spirit of private enterprise in this country and this type of legislation offers the best facilities for accomplishing such an end that is known at present.

Pennsylvania Plans

DR. WALTER F. DONALDSON, Pittsburgh, Secretary, Pennsylvania State Medical Society: First of all there was no question about the justification of the development of a plan for Pennsylvania, because in every session of the Pennsylvania legislature for the last five or six regular sessions we have had presented a bill which incorporated the compulsory health insurance, and it has been necessary on all occasions to defeat that legislation. This year in the legislature, had we not been in the foreground, we would never have been in position to defeat legislation setting up a similar plan to be incorporated with insured hospitalization service as you all know it and the same service offered by a group of dentists, nurses and pharmacists incorporating the services of physicians.

Pennsylvania has not gone off half cocked in preparing to meet this problem. The bill which was passed by the Pennsylvania legislature was well prepared, having been prepared on the advice at all stages of its preparation by no less an authority than the Director of the Bureau of Legal Medicine and Legislation of the American Medical Association.

We have had one or two surprise elements, not the least of which was what I have already mentioned, the willingness of other organizations and groups who sell service to the sick to offer this plan to the legislature and to carry us along with them.

You may hear within the next few weeks that we are meeting with difficulty in Pennsylvania. We were authorized by our 1938 house of delegates to go ahead, prepare the legislation and have it passed, if possible, and when we were ready to present the plan to the 1939 house of delegates of our state society we were given a surprise complication in the form of a photostat copy of our preliminary plan, which had been rather widely distributed, innocently enough we believe, to our delegates before they came to the session, omitting from the photostat copy an explanatory introductory letter which said "This is being given to you for your study, for your comments, and for revision as you may advise it."

If you are ever going to bring it up in your state medical society, use all the effort you possibly can to guarantee that your membership may thoroughly understand it as you go along. We thought we were doing it thoroughly enough, but we were astonished to find that our men apparently could not absorb the skeleton construction as we are passing it around in that graph. They can understand proposed agreements between physicians and the corporation; they can understand fee bills, but you must make every effort to have it clear to them just what is meant as it is embodied in the legislation.

DISCUSSION

DR. NATHAN SMITH DAVIS III, Chicago: Last spring an insurance man was introduced to me. He told me about a policy he had written for the Boston Store employees in Chicago, many of whom are earning under \$1,000 a year. For this Boston Store group he worked out a plan—the group being one that had about 65 per cent of women in it—that would pay \$4 a day for hospital or sanatorium care plus \$20 for extras with each admission, and as many admissions a year as were necessary and as long, each one, up to thirteen weeks in length up to age 60, and from age 60 to 70 only one admission a year. After age 70 they wouldn't take them. The only exceptions in the policy were pregnancy during the first ten months and anything in which there was employer's liability included. This coverage cost the Boston Store group 65 cents a month. He sold the insurance to more than 60 per cent of the employees of the Boston Store in eleven days. He was the only salesman involved and he did not talk to very many of the employees; in fact, he talked only to the committee with which he worked out the policy, but that committee did the rest of the selling and 60 per cent, or more than 800 employees, were signed up in eleven days. At Butler Brothers' it took only seven days to get the same number of employees from the same sales method. The low price is partly due to the fact that his is the only commission involved. I also heard him talk to some groups and was much impressed by his talking against government insurance. I thought it would be a good matter to bring it before the medical profession. He prepared a policy for the Chicago Medical Society providing \$6 a day, plus \$30 for extras, that had the same number of weeks coverage and also the exemptions, including previous illnesses,

diagnosis, mental cases, tuberculosis and social diseases in the policy. The charge is \$10 a year. It was approved by the council at almost its last meeting last spring, and the sale had to be made exclusively by mail because neither the society nor its branches met again until October. Eighteen hundred of our 3,000 or so eligible members have already joined. Shortly a family coverage policy will be added, and that will be higher, I think \$15 a year for the wife, \$1 and a few cents a year for each child and the coverage will total approximately \$485 in any one year for the wife and children together. This type of policy can really be written only if there is a group of 1,000 or more involved. If the claims fall below a certain percentage there is a dividend to the insured. That factor makes it almost impossible for many of the county medical societies of the country to take the policy as we have it here in Cook, where we have some 4,200 or 4,300 members. It makes it something much better suited for a state society to undertake. We feel it is a good example to the public, which does favor the indemnity type of insurance, which the house of delegates has favored rather than a service policy. I think that a policy such as the Chicago Medical Society has is something that state societies all over the country might well consider for their own membership, not only for the benefit to the members but for the example it sets to the public.

DR. W. C. WOODWARD, Chicago: During the last sessions of the several state legislatures medical service acts were passed in Connecticut, Michigan, New York, Pennsylvania and Vermont. We have had analyses of those acts prepared and will distribute them. There is one feature of the Pennsylvania act that I believe is insufficiently appreciated. It is not sufficient protection to the profession to provide that an incorporation to furnish medical services shall be a nonprofit corporation. One might suppose the fact that an enabling act providing that services of this character could be furnished only by a nonprofit corporation would afford adequate protection against a multiplicity of corporations. Those of you who have looked into the matter, however, doubtless know that a nonprofit corporation does not primarily mean a corporation that does not make money. It means a corporation that does not distribute money among any interested shareholders or stockholders. In this act the law requires, in the first place, that the application for articles of incorporation shall be approved by the department of insurance. It provides that the application shall then be approved by the state department of health. Any nonprofit corporation might bring itself

within those limits. But then comes the final protection, because it provides, after these two approvals have been given, "the court shall not approve such application unless and until the articles are returned by the insurance department and unless both the department of health and the insurance department shall have endorsed its approval thereon. The court shall be guided solely by public necessity and public interest and welfare in approving or disapproving the articles of incorporation." In other words, if there are within any given area corporations organized under this act, or if there are in any given area sufficient facilities already to meet the needs of the community, the court is to be guided by the public necessity. This law requires that a majority of the incorporators be doctors of medicine and that a majority of the directors be at all times doctors of medicine. Dr. Palmer has already called your attention to the fact that the act itself practically defines what shall constitute a medical need. It gives the income a family may have in order to come within the group. But then the act regulating the conduct of these organizations goes further and provides that "any person, partnership, association, common law trust, or corporation that violates any provision of this act or of any order of the department of health or of the insurance department made pursuant thereto, any person who hinders or prevents the department of health or the insurance department in the discharge of any duty imposed on it by this act, any person who fraudulently procures or attempts to procure any benefit under this act, and any person who willfully makes any false statement in any proceeding or report under the provisions of this act, shall be guilty of a misdemeanor and, on conviction thereof, shall be sentenced to pay a fine of not more than \$1,000, or to be imprisoned for not more than six months, or both, in the discretion of the court." Some question has been raised as to the feasibility of organizing medical service corporations outside the ordinary insurance laws, on the theory that there is some special power or dispensation that favors physicians with respect to the matter. You want to go slow in availing yourselves of any such supposed privilege. You want always to remember that, if you can organize a corporation and provide for the furnishing of medical services on a prepayment plan or the indemnification of subscribers for the costs of medical services on a prepayment plan, then you will find that others in the community, lay or medical, will be able to do the same thing unless you have had some special statute that will prevent it. (To be continued)

OFFICIAL NOTES

ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The second Annual Congress on Industrial Health, sponsored by the American Medical Association, will be held Monday and Tuesday, January 15 and 16, at the Palmer House in Chicago. Topics and speakers are as follows:

OPENING SESSION, MONDAY MORNING, 9:45

Report of the Council on Industrial Health.

STANLEY J. SEEGER, M.D., Chairman, Milwaukee.

Vocational Rehabilitation in Relation to Medical Practice and Workmen's Compensation Procedure.

TERRY C. FOSTER, U. S. Office of Education, Washington, D. C.

Industrial Psychiatry and Mental Hygiene.

LYDIA G. GIBBERSON, M.D., New York.

Adequate Nutrition for the Industrial Worker.

LELA E. BOOHER, Ph.D., U. S. Department of Agriculture, Washington, D. C.

MONDAY AFTERNOON, 2:15 SYPHILIS IN INDUSTRY

Syphilis in Industry with Special Reference to Its Incidence and Relation to Trauma.

EARL D. OSBORNE, M.D., Professor of Dermatology and Syphilology, University of Buffalo School of Medicine, Buffalo.

Syphilis Case Finding in Industry.

ALBERT E. RUSSELL, M.D., Surgeon in Charge, Office of Syphilis Control in Industry, U. S. Public Health Service, Chicago.

Integrating Syphilis Control Between the Industrial and the Private Practitioner.

HAROLD A. VONACHEN, M.D., President, Central States Society of Industrial Medicine and Surgery, Peoria, Ill.

Syphilis and Employment.

HARVEY BARTLE, M.D., Chief Medical Examiner, Pennsylvania Railroad, Philadelphia.

MONDAY EVENING, 6:30

An informal dinner and round table discussion, intended primarily for members of state and county medical society committees on industrial health, will be held. The subject matter for discussion will include problems of organization and plans for future activity.

TUESDAY MORNING, 9:30

PHYSICAL EXAMINATIONS

Objectives of Health Examinations and Their Industrial Applications.

McIVER WOODY, M.D., President, American Association of Industrial Physicians and Surgeons, New York.

The Private Practitioner and Industrial Physical Examinations.

RAYMOND HUSSEY, M.D., Chairman of Committee on Industrial Health, Medical and Chirurgurgical Faculty of the State of Maryland, Baltimore.

The Wisconsin Plan for Physical Examinations in Industry:

The Point of View of the Industrial Commission.

HARRY A. NELSON, Director, Workmen's Compensation, Industrial Commission of Wisconsin, Madison, Wis.

Scope and Methods of Industrial Physical Examinations of the Wisconsin Plan.

PAUL A. BREHM, M.D., Chairman of the Medical Subcommittee on Physical Examinations in Industry, Industrial Commission of Wisconsin, Madison, Wis.

TUESDAY AFTERNOON, 2 O'CLOCK

DISABILITY EVALUATION

Hearing Loss—Estimation of Disability.

AUSTIN HAYDEN, M.D., Chairman Consultants on Audiometers and Hearing Aids, Council on Physical Therapy, American Medical Association, Chicago.

Present Status of Estimating Disability from Visual Loss.

HARRY S. GRADLE, M.D., Chicago.

Are Uniform Standards of Disability Evaluation Practicable?

EARL D. MCBRIDE, M.D., Oklahoma City.

Critique of Disability Evaluation.

HENRY H. KESSLER, M.D., Newark, N. J.

WEDNESDAY, JANUARY 17

On the day following the Congress on Industrial Health, the Chicago Medical Society will conduct all day clinics illustrating practical problems in industrial medicine and traumatic surgery at St. Luke's Hospital in Chicago. These programs are under the direction of Dr. HARRY E. MOCK. On the same day the Chicago Medical Society will conduct a dinner and evening meeting to be addressed by Dr. VILRAY P. BLAIR, St. Louis, on "Treatment of Facial Deformities Caused by Injury." These presentations will be available to registrants at the congress, all of whom are invited to participate. The program follows:

- 9:00—St. Luke's Tumor Group.
Subject: *Malignancies Allegedly Due to Trauma.*
(a) *Pathologic Demonstration.* EDWIN F. HIRSCH, M.D.
(b) *Demonstration of Cases.* PAUL H. HOLINGER, M.D., CHARLES E. SHANNON, M.D., and JOHN D. ELLIS, M.D.
(c) *X-Ray Demonstration of Tumors Allegedly Due to Trauma.* EDWARD L. JENKINSON, M.D.
- 10:00—*Spontaneous Collapse of the Lung.* JAMES A. BRITTON, M.D.
Demonstration of Cases. THOMAS COOGAN, M.D.
- 10:30—*Injuries of the Chest.* WILLARD VAN HAZEL, M.D.
- 11:00—*Trauma in Diabetes and Peripheral Vascular Disease.*
(a) *Medical Aspect.* ROBERT W. KEETON, M.D., CHESTER COGGESHALL, M.D., and CARL A. JOHNSON, M.D.
(b) *Surgical Aspect.* GEZA DE TAKATS, M.D., S. PERRY ROGERS, M.D., and HARRY E. MOCK, M.D.
- 12:00—*X-Ray Problems in Industry.* HOLLIS E. POTTER, M.D.
- 12:30—Buffet Luncheon served at St. Luke's Hospital.
- 1:30—*Compression Fractures of the Spine.* EDWIN W. RYERSON, M.D.
- 2:15—*Surgical Demonstration.* SELIM W. MCARTHUR, M.D., H. E. JONES, M.D., and ASSOCIATES.
- 2:45—*Lead Encephalopathy.* GEORGE W. HALL, M.D.
- 3:00—*Supracondylar Fractures of the Femur.* WILLIAM CUBBINS, M.D.
- 3:20—*Fractures of the Tibia into the Knee Joint.* T. L. HANSEN, M.D.
- 3:40—*Coronary Thrombosis and Trauma.* N. C. GILBERT, M.D., and G. K. FENN, M.D.
- 4:00—*Demonstration of Holding Power of Various Screws used in Bone.* WILL F. LYON, M.D.
- 4:20—*Physical Therapy Demonstrations.* JOHN S. COULTER, M.D.
- 6:30—Dinner, Chicago Woman's Club, 72 East Eleventh Street.
- 8:30—*Auditorium Chicago Woman's Club, 72 East Eleventh Street.*
The Treatment of Facial Deformities Due to Trauma. VILRAY P. BLAIR, M.D., St. Louis.
Discussion, FREDERICK MOOREHEAD, M.D., and HERBERT A. POTTS, M.D.

For Clinic tickets apply Chicago Medical Society, 30 North Michigan Avenue.

ADDRESSES BY OFFICIAL STAFF

DR. W. W. BAUER:

- January 8—High School, Chariton, Iowa.
January 8—Woman's Club, Chariton, Iowa.
January 8—Lion's Club, Chariton, Iowa.
January 9—Appanoose County Woman's Club, Centerville, Iowa.

- January 9—Commercial Club, Centerville, Iowa.
January 9—High School, Centerville, Iowa.
January 17—Beverly Hills Woman's Club, Chicago.
January 19—Family Health Association, Cleveland.
January 26—Portage Park Woman's Club, Chicago.
February 2—Wilmette Congregational Church, Wilmette, Ill.

DR. MORRIS FISHBEIN:

- January 3—Temple University Medical School, Philadelphia.
January 3—Rotary Club, Philadelphia.
January 3—Men's Club, Temple Keneseth Israel, Philadelphia.
January 10—Fort Smith Junior College, Fort Smith, Ark.
January 11—Sebastian County Medical Society, Fort Smith, Ark.
January 12—Tulsa County Medical Society, Tulsa, Okla.
January 16—Annual Dinner of Catholic Charities Bureau, Indianapolis.
January 19—Methodist Hospital, Indianapolis.
January 25—Connecticut State Medical Society, Hartford, Conn.
January 30—Missouri Social Hygiene Association, St. Louis.
January 31—Morton High School, Auspices of Western Electric Company, Chicago.

DR. R. G. LELAND:

- January 9—Accident and Health Association of Chicago, Chicago.

DR. ROCK SLEYSER:

- January 17—District of Columbia Medical Society, Washington, D. C.

DR. PAUL A. TESCHNER:

- January 19—Elmhurst Hospital Guild, Elmhurst, Ill.
January 23—Barrington Parent Teacher Association, Barrington, Ill.
January 26—Aux Plaines Auxiliary, River Forest, Ill.
January 30—North Shore Kiwanis, Chicago.
February 1—Y. W. C. A., Chicago.
February 2—Central Y. M. C. A., Chicago.

DR. NATHAN B. VAN ETEN:

- January 9—De Lamar Lecture, School of Hygiene and Public Health, Johns Hopkins University, Baltimore.
January 25—National Health Council, New York.
January 30—Queens County Medical Society, New York.

WOMAN'S AUXILIARY

New Jersey

The auxiliary to the Camden County Medical Society met at the home of Mrs. Max L. Weimann, president, in Haddon Heights October 3. Speakers were Miss Ruth M. Outland, principal of the Friends' School of Haddonfield, Mrs. Edward Catlett and Richard Wood, of Philadelphia, a representative of the Friends' Peace Committee.

The auxiliary to the Hudson County Medical Society met in Jersey City October 2. The auxiliary observed its twelfth anniversary by adding twelve members to its group.

The auxiliary to the Ocean County Medical Society met in Barnegat at the home of Mrs. Frederick N. Bunnell October 7. Mrs. Howard Hornberger, Roebling, spoke on the necessity of the auxiliary's assisting in the effort to secure funds for the relief of widows and orphans of physicians.

Oregon

An auxiliary to the Mid-Columbia Medical Society, comprised of physicians from Hood River, Wasco, Morrow, Sherman, Gilliam, Wheeler and Grant counties, was organized November 13.

A meeting of the board of directors of the auxiliary to the Oregon State Medical Society was held in Portland November 14. Dr. Charles E. Hunt, president of the Oregon State Medical Society, addressed the group. Dr. John H. Fitzgibbon, Oregon member of the House of Delegates of the American Medical Association, addressed the auxiliary to the Multnomah County Medical Society at its October meeting in Portland.

Virginia

The auxiliary to the Northampton-Accomac Medical Society met at the home of Mrs. O. R. Fletcher in Sanford October 10. Delegates to the annual meeting of the auxiliary to the Medical Society of Virginia in Richmond October 4-7 reported that the Northampton-Accomac auxiliary received the exhibit award at the state meeting. The objective for the year is work in behalf of the Northampton-Accomac Memorial Hospital at Nassawadox. Chairs for patients' rooms were provided by the auxiliary recently.

Washington

The Walla Walla County Medical Society appointed a committee November 9 to provide publicity for the broadcasts of the Washington State Medical Association which are given on the Mutual Network from Seattle each week.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Society News.—Dr. Norman Van Wezel, director of the Montgomery Tuberculosis Sanatorium, addressed the Houston County Medical Society November 3 on "Treatment of Pulmonary Tuberculosis."—The Calhoun County Medical Society was addressed in Anniston November 2 by Drs. Groesbeck F. Walsh and Robert M. Pool, Fairfield, on "Twins and Twinning."

ARKANSAS

District Meeting.—At a meeting of the Ninth Councilor District Medical Society in Harrison December 5 the speakers were Drs. Davis W. Goldstein, Fort Smith, on cancer; George V. Lewis, Little Rock, diagnosis and treatment of goiter; Merlin J. Kilbury, Little Rock, blood stream infection; John N. Compton, Little Rock, jaundice, and Charles T. Chamberlain, Fort Smith, pneumonia.

CALIFORNIA

Copley Medal Awarded to Dr. Morgan.—The Royal Society in November awarded the Copley Medal to Thomas Hunt Morgan, Ph.D., since 1928 director of the William G. Kerckhoff Laboratories at the California Institute of Technology, for "his establishment of the modern science of genetics, which revolutionized the understanding not only of heredity but of the mechanism and nature of evolution," according to the *New York Times*. Dr. Morgan was born in Lexington, Ky., in 1866. He was the first person who was not a physician to receive the Nobel Prize in medicine, which in 1933 was awarded to him for his work on theory of the gene.

CONNECTICUT

Committee Named to Revise Medical Curriculum.—A committee has been appointed at Yale University School of Medicine, New Haven, to review the present course of studies for the purpose of recommending curricular revision, according to the *New York Times*. The committee, composed largely of younger members of the faculty, has been given a wide scope. It has been told to survey the whole plan of instruction in the light of the school's primary educational objective in giving broad training to qualified men and women for medical work. The committee has no time limit, but its recommendations will be checked and considered by the permanent officers of the school's faculty. Recent reports in *THE JOURNAL* and other publications indicate that the curriculum is being adjusted to advances in knowledge, new points of view and changes in social and economic conditions. One possible revision is a breaking down of the artificial separation between the so-called preclinical and clinical years, it was said. Members of the newly appointed committee include: Dr. Hebbel E. Hoff, associate professor of physiology, chairman; Dr. Warren T. Brown, assistant professor of psychiatry and mental hygiene; Philip B. Cowles, Ph.D., assistant professor of immunology; Dr. Daniel C. Darrow, associate professor of pediatrics; Alfred Gilman, Ph.D., assistant professor of pharmacology and toxicology; Dr. John C. Leonard, instructor in medicine; Dr. Gustaf E. Lindskog, assistant professor of surgery; Leon S. Stone, Ph.D., associate professor of anatomy; Dr. Herbert Thoms, associate professor of obstetrics and gynecology; John H. Watkins, Ph.D., assistant professor of public health; Abraham White, Ph.D., assistant professor of physiologic chemistry; Drs. Harry M. Zimmerman, associate professor of pathology, and Stanhope Bayne-Jones, dean, ex officio.

FLORIDA

Personal.—Dr. George S. McClellan, Pompano, has been appointed a member of the state board of medical examiners, succeeding the late Dr. Corbett E. Tumlin, Miami. Dr. Isaac W. Chandler, Avon Park, has also been appointed a member of the board.

Society News.—Officers of the Florida East Coast Medical Association chosen at its twelfth annual session in Ponte Vedra in November include Drs. Isaac M. Hay, Melbourne, president; Edwin C. Swift and Arthur J. Logie, both of Jackson-

ville, vice presidents, and Joseph S. Stewart, Miami, secretary. —Dr. William H. McCullagh discussed "Myotonia Congenita" before the Duval County Medical Society in Jacksonville November 7.

IDAHO

Society News.—Herald R. Cox, Sc.D., U. S. Public Health Service, Hamilton, Mont., discussed "Nine Mile Fever" at a meeting of the Idaho Falls Medical Society November 6.—Dr. Arthur F. Cunningham, Spokane, Wash., addressed the North Idaho Medical Society, Lewiston, November 15 on plastic surgery.

ILLINOIS

Physicians Honored.—Members of the Illinois State Medical Society and citizens of Scott County honored Drs. George W. Bowman, Alsey, and George M. Straight, Winchester, at a banquet November 22 held to celebrate their many years of practice. Dr. Bowman has been practicing in Scott County for fifty-nine years and Dr. Straight fifty-eight.—Drs. Walter D. Stevenson, Earl L. Caddick and Harry O. Collins were honored by St. Mary's Hospital, Quincy, with a dinner November 7 to observe their completion of twenty-five years on the staff of the hospital.

Hospitals Cooperate in Public Relations Project.—A group of eleven hospitals serving three counties to the west of Chicago have united in a cooperative public relations effort. The principal activity at present is a half hour radio broadcast consisting of music, health dramatizations and the presentation of hospital facts of interest to the community. The hospitals cooperating in this are Copley, St. Joseph, Mercy and St. Charles hospitals in Aurora; Sherman and St. Joseph hospitals in Elgin; the Elmhurst Community Hospital, Inc., in Elmhurst; the Community Hospital, Geneva; the Hinsdale Sanitarium and Hospital, Hinsdale; Silver Cross and St. Joseph's Hospitals, Joliet, and the City Hospital in St. Charles. Each week one of the hospitals acts as the host for the program, which includes a short history of the hospital and some pertinent community information. Dramatic material offered for the broadcast is furnished by the Bureau of Health Education of the American Medical Association. About two or three minutes toward the end of the program are devoted to a statement on some phase of hospital activity as it affects the community as a whole and the sick in particular, emphasizing always the work of the hospital and the physicians as a vital factor in the community, according to the announcement. These programs are being presented by radio station WMRO, Aurora, as a public service feature and the cost to the hospitals thus far has been small.

Chicago

Two Million Willed to Billings Clinic.—The University of Chicago will receive about \$2,000,000 under the will of Orson C. Wells, retired Chicago broker, who died December 10. Mr. Wells directed that the gift be used to found a permanent fund for medical education and research in connection with the Billings Clinic, a part of the Albert Merritt Billings Hospital, at the institution. The university will use the gift to meet expenses in its medical work, it was stated. The will also provides for a \$50,000 bequest to the Presbyterian Hospital for use in urologic research.

Society News.—Dr. Hugh R. Butt, Rochester, Minn., addressed the North Shore Branch of the Chicago Medical Society January 2 on "Vitamins, Recent Advances and Their Clinical Application." Dr. Marion A. Blankenhorn, Cincinnati, discussed "The Serum and Chemotherapy of Lobar Pneumonia" before the North Side Branch January 4.—At a meeting of the Chicago Laryngological and Otological Society January 8 the speakers will be Drs. John R. Lindsay on "Laryngocele"; Gordon H. Scott, "Caries of the Vertebrae in Retropharyngeal Space Infection"; Henry B. Perlman, "The Eustachian Tube: Normal Physiology; Abnormal Patency," and Paul C. Bucy and William Tracy Haverfield, "Cranial and Intracranial Complications of Frontal Sinusitis."

INDIANA

Clinic for Personality Disorders.—A child study and guidance clinic will be established early this month at the James Whitcomb Riley Hospital for Children on the campus of the Indiana University Medical Center, Indianapolis. The new clinic will seek to correct personality maladjustments in children and parents will be instructed in the best methods of controlling their children and gradually eliminating the causes of emotional disturbances. Under the supervision of Dr. David

A. Boyd Jr., recently appointed head of the department of mental and nervous diseases of the school of medicine, the clinic will be a wholly new department of Riley Hospital, it was stated. Children from all counties of the state will be eligible for admission on the same basis as child patients now are admitted for other treatment at the Riley Hospital. The new work will be financed by annual grants from a research fund created by individuals and chiefly from the Louis C. Heusmann Foundation, established as a memorial to the Indianapolis business man and philanthropist who was active in the building of the Riley Hospital. Assisting Dr. Boyd will be Dr. Exie E. Welsch, psychiatrist of the state board of health, Dr. Matthew Winters, chairman of the pediatrics committee of the school of medicine, and Dr. Lyman T. Meiks, chief pediatrician of Riley Hospital.

MASSACHUSETTS

Drs. Hektoen and Murphy to Give Cutter Lectures.—Dr. Ludvig Hektoen, executive director of the National Advisory Cancer Council of the U. S. Public Health Service, Washington, D. C., will give the first of a series of two annual Cutter Lectures in Preventive Medicine at the Harvard Medical School, Boston, January 15. He will talk on the general subject of cancer control with special reference to its public health and epidemiologic aspects. Dr. James B. Murphy, Rockefeller Institute for Medical Research, New York, will give the second Cutter lecture January 22, presenting a critical review of experimental studies in cancer.

Society News.—Richard H. Shryock, Ph.D., professor of American history, University of Pennsylvania, Philadelphia, spoke before the Boston Medical History Club November 20 on "The Historian Looks at Medicine."—At a meeting of the Massachusetts Society of Examining Physicians November 22 Asst. U. S. Atty. William T. McCarthy, in charge of the criminal division, discussed narcotics, and Dr. William J. Brickley, Boston, "The Cause and Manner of the Squalid Deaths."—The Wachusett Medical Improvement Society was addressed December 6 by Dr. John J. Dumphy, Worcester, on "Sulfanilamide, Sulfapyridine and Related Compounds."—At a meeting of the New England Heart Association November 27 the speakers included Drs. Bernard J. Walsh, Edward F. Bland and Paul D. White on "An Autopsy Study of the Relations of Gallbladder Disease and of Peptic Ulcer to Coronary Disease" and James C. White and Howard B. Sprague, "Cervicothoracic Sympathectomy in Preference to Paravertebral Alcohol Injection for Angina Pectoris with High Radiation of Pain: New Technic." All are from Boston.—Dr. Paul R. Cannon, Chicago, discussed "Relation of Flocculating Antibodies to Tissue Hypersensitiveness and Localized Disease" before the New England Pathologic Society November 16.

MICHIGAN

New Dean at Wayne University.—Dr. Edgar H. Norris, since 1938 professor of pathology at Wayne University College of Medicine, Detroit, was elected dean of the school December 12. He succeeds Dr. Raymond B. Allen, who recently became executive dean of the Chicago colleges of the University of Illinois. Born in Lagrange, Ind., in 1893, Dr. Norris graduated at the University of Minnesota Medical School, Minneapolis, in 1919. He taught anatomy at his alma mater 1915-1916 and pathology 1917-1918.

Pediatric and Infectious Disease Meeting.—At the eighteenth annual meeting of the University of Michigan Pediatric and Infectious Disease Society in Ann Arbor November 24-25 Dr. Mark F. Osterlin, Traverse City, was elected president; Dr. Campbell Harvey, Pontiac, vice president, and Dr. David Murray Cowie, Ann Arbor, was reelected secretary. At the opening session Dr. Clement A. Smith, Brookline, Mass., gave the presidential address, on "Maternal Anesthesia and Fetal Anoxemia in Obstetrics."

Annual Secretaries' Conference.—The annual county secretaries' conference of the Michigan State Medical Society will be held at the Olds Hotel, Lansing, January 21. The morning session will be devoted to round table discussions of Michigan Medical Service, medical relief, afflicted-crippled child laws, postgraduate medical education and scientific program arrangement. For the first time in Michigan a joint meeting will be held for the noonday dinner and afternoon program with the health officers of the state. Subjects for discussion will include problems of preventive medicine, immunization and new and modern procedures and developments in the field of public health.

Conference on Industrial Medicine.—A conference on industrial medicine and hygiene will be held at the University of Michigan, Ann Arbor, January 11-13 with Dr. Clarence D. Selby, Detroit, medical consultant, General Motors Corporation, as general chairman. Among the speakers will be:

J. J. Bloomfield, sanitary engineer, division of industrial hygiene, U. S. Public Health Service, Health Problems in Industry.
Dr. Stanley J. Seeger, Milwaukee, chairman, Council on Industrial Health, American Medical Association, Industrial Health and the Physician.
Dr. Kenneth E. Markuson, director, bureau of industrial hygiene, state department of health, Lansing, Coordination of Industrial Hygiene with Other Health Agencies in the Community.
Dr. George Van Rhee, Detroit, committee on occupational diseases and industrial hygiene, state medical society, Industrial Dermatoses.
Herbert G. Dykter, state department of health, Lansing, Integration of Industrial Hygiene with Industrial Medicine.
William Frederick, Ph.D., and Herbert Walworth, M.S.E., bureau of industrial hygiene, Detroit department of health, Demonstration of Field Instruments Utilized in Industrial Hygiene.
Dr. Louis W. Spolyar, Indianapolis, chief, bureau of industrial hygiene, Indiana state board of health, State Industrial Hygiene Surveys.
Dr. Kenneth D. Smith, Columbus, chief, bureau of occupational diseases, Ohio state department of health, Function of the State in the Control of Occupational Diseases.
Dr. Milton H. Kronenberg, Chicago, chief, division of industrial hygiene, Illinois department of public health, Value of Records in Industry.

Additional information may be obtained from the division of hygiene and public health, University of Michigan, Ann Arbor.

MINNESOTA

Special Course in Pathology.—A course entitled "Surgical Pathology with Special Attention to Tumors" will be offered at the University of Minnesota Medical School, Minneapolis, June 19-July 26. This is the same course that was presented at the university last summer by Dr. James S. McCartney, associate professor of pathology at the school.

NEW JERSEY

The Martland Lecture.—Dr. Emanuel Libman, New York, will deliver the fifth annual Harrison S. Martland Lecture before the Essex County Anatomical and Pathological Society at the Academy of Medicine of Northern New Jersey, Newark, January 24, on "Endocarditis."

Society News.—Dr. Ralph Pemberton, Philadelphia, addressed the Gloucester County Medical Society, Woodbury, December 21, on arthritis.—Dr. Charles S. Prest, Brooklyn, and Mr. Philip P. Jacobs, New York, addressed the Morris County Medical Society, Morris Plains, December 21, on modern concepts of tuberculosis.

NEW YORK

Dr. Heyd Addresses Public Meeting.—Dr. Charles Gordon Heyd, New York, delivered a public lecture in Rochester November 26 on "The Romance of Modern Surgery." The lecture was sponsored by the Medical Society of the County of Monroe, the Rochester Academy of Medicine and the University of Rochester School of Medicine.

Society News.—A symposium on Meckel's diverticulum was presented before the Rochester Pediatric Society December 8 by Drs. John Aikman, Herbert C. Soule, Howard F. Rowley and Cyril Sumner.—Dr. Frank Glenn, New York, addressed the Dutchess County Medical Society, Poughkeepsie, December 13 on "Tumors of the Large Intestine."—Dr. David D. Rutstein, Albany, N. Y., addressed the Broome County Medical Society, Binghamton, December 12 on treatment of pneumonia.

Outbreaks of Trichinosis.—Nine cases of trichinosis in Potsdam, St. Lawrence County, were recently reported to the state department of health following a church supper at which pork sausage was served, October 25. The pork from which the sausage was made was obtained from one person whose pigs had been fed on raw garbage.—Five persons in one family in Rochester were stricken with trichinosis during the week of December 11 after eating home-made pork sausage.

New York City

Personal.—Dr. Charles F. Bolduan, director of the bureau of health education of the city department of health, was honored by his colleagues in the department November 22 with a surprise party in celebration of his thirty-fifth anniversary in public health work.—Mr. Raymond P. Sloan, associate editor of *Modern Hospital*, has been appointed to the board of trustees of the Long Island College of Medicine.

Dinner of Euthanasia Society.—The second annual dinner of the Euthanasia Society of America will be held January 16 at the Town Hall Club. Headquarters of the society are at 136 East Fifty-Seventh Street and the president is Clarence C. Little, Sc.D., managing director of the American Society for the Control of Cancer. Dr. Abraham L. Wolbarst is chairman of the dinner committee.

Examination of Domestic Workers.—The Bureau of Part Time Work, an agency which finds employment for persons who wish to work short hours, is inaugurating a movement to have domestic servants receive x-ray examination of the lungs, Wassermann tests and general physical examinations semiannually, according to an announcement. The bureau will require persons placed through its own service to have these health examinations and will urge commercial employment agencies to have their registrants tested in the same way.

Hospital News.—The Swedish Hospital of Brooklyn recently opened and dedicated one wing of its new home at 1350 Bedford Avenue, made possible by alteration of property owned by the hospital. The new wing has a capacity of 100 beds. There are two operating rooms. The Swedish Hospital was organized in 1906 and had extended its services until its old buildings were inadequate. Col. A. W. J. Pohl is executive officer. —Prof. Arturo Castiglioni, professor of the history of medicine, Royal University of Padua, Italy, gave a lecture at Mount Sinai Hospital December 14 on "Hippocratic Medicine and the Orientation of Modern Medical Thought."

Physiologist Dies.—Frederic S. Lee, Ph.D., who taught physiology at Columbia University from 1891 to 1938, died December 14 in Waverly Sanatorium, Columbia, S. C., aged 80. Dr. Lee took his doctorate at Johns Hopkins University, Baltimore, in 1885 and studied in Europe a year before becoming instructor in physiology at St. Lawrence College. From 1887 to 1891, when he joined the faculty of Columbia, Dr. Lee taught physiology and histology at Bryn Mawr College. At Columbia he was successively demonstrator in physiology, adjunct professor, Dalton professor, research professor and professor until his retirement in 1938. Dr. Lee was president of the Society for Experimental Biology and Medicine, 1908-1910, and of the American Physiological Society, 1917-1918, and was chairman of the Federation of American Societies for Experimental Biology in 1917. He was an editor of the *American Journal of Physiology* from 1898 to 1914.

Society News.—At a meeting of the International Spanish Speaking Association of Physicians, Dentists and Pharmacists December 15 Drs. Walter Gray Crump and Alvan L. Barach read papers on "Carcinoma of the Digestive Canal" and "Modern Treatment of Asthma" respectively. —A symposium on "Chemotherapy Including Sulfapyridine and Allied Compounds" was presented at the annual meeting of the New York Academy of Medicine January 4 by Drs. Francis G. Blake, New Haven, Conn.; Norman H. Plummer and William S. Tillett. —Dr. John F. Fulton, New Haven, among others, will address a combined meeting of the New York Neurological Society and the section of neurology of the New York Academy of Medicine January 9 on "Recent Experimental Disclosures Concerning the Functions of the Frontal Lobes." —Drs. Samuel M. Feinberg, Chicago, and Marion B. Sulzberger addressed the Medical Society of the County of Kings December 19 on "Inhalation Allergy: Recent Experiences" and "Allergic and Nonallergic Hypersensitivity as Factors in Industrial Dermatitis" respectively. —Dr. Kenneth M. Lewis addressed the New York Surgical Society December 6 on "Russell Traction in the Treatment of Fractures of the Femur—Observations on 156 Cases." —At a meeting of the New York Physical Therapy Society December 6 papers on physical medicine in peripheral vascular disease were presented by Dr. Irwin D. Stein, who discussed "Capillary Microscopy"; Dr. Samuel Silbert and Dr. William Bierman and Mac Friedlander, Ph.D., "Temperature Changes in Skin and Muscle."

OHIO

Personal.—Dr. Thomas H. George, Cleveland, has been appointed a member of the State Medical Board of Ohio to succeed the late Dr. Carlyle W. Dewey, Conneaut. —Dr. Bennetta D. Titlow, Springfield, was honored with a testimonial dinner given by the Clark County Medical Society November 17 on her retirement after forty-seven years of practice. Dr. Clarence E. M. Finney, Springfield, president of the society, presided and Judge Charles B. Zimmerman of the Ohio Supreme Court was the principal speaker. —Dr. Walter H. Hartung, Toledo, former state director of health, has been appointed superintendent of the city bureau of medical relief in Toledo.

OKLAHOMA

Society News.—Dr. Clarence C. Young, Shawnee, addressed the Pottawatomie County Medical Society in Shawnee November 18 on burns. Drs. Frank M. Keen and Charles F. Paramore addressed the society December 2 on "Hyperthyroidism Complicating Pregnancy" and "The Puerperium" respectively. —Dr. Henry H. Turner, Oklahoma City, addressed the Garfield County Medical Society, Enid, December 21 on "Male and Female Sex Hormones."

OREGON

Society News.—Dr. Samuel G. Henricke, Portland, addressed the Coos-Curry Counties Medical Society recently on "Immunology in the Practice of Pediatrics." —Mr. R. E. Jackson, claim agent of the State Industrial Accident Commission, discussed the workman's compensation law at a recent meeting of the Polk-Yamhill-Marion Counties Medical Society. —Drs. Weston W. Heringer, McMinnville, and William T. Edmundson, Newberg, addressed the Yamhill County Medical Society, McMinnville, December 5 on "Treatment of the Failing Heart" and "Chronic Amebiasis" respectively. —Olof Larsell, Ph.D., Portland, addressed the Oregon Neuropsychiatric Society November 22 in Portland on recent developments in the study of the anatomy of the cerebellum. —Dr. Charles E. Sears, Portland, addressed the Multnomah County Medical Society, Portland, December 6 on hypertension and Dr. Kenneth G. Smith, Portland, presented a case report on nephrectomy and hypertension.

PENNSYLVANIA

General Reynolds to Direct Tuberculosis Control.—Major Gen. Charles R. Reynolds, retired, recently surgeon general of the U. S. Army, has been appointed director of the division of tuberculosis control in the state department of health. To help plan an expanded program in this field the state secretary of health, Dr. John J. Shaw, announced the appointment of an advisory committee with the following members: Drs. Joseph McDeldowney, John D. McLean, Louis Cohen, Charles J. Hatfield, Esmond R. Long, Burgess Gordon, Robert G. Torrey, William G. Turnbull, all of Philadelphia; Charles Howard Marcy, Pittsburgh; Charles H. Miner, Wilkes-Barre; William Devitt, Allenwood, and John H. Bisbing, Reading.

Philadelphia

Hospital News.—Dr. Jacob Prager, formerly assistant director of the Jewish Hospital of Brooklyn, has been appointed medical director of Mount Sinai Hospital. Mr. Harry W. Benjamin, formerly associate superintendent of the hospital, has been made superintendent.

Dr. Owen Appointed Director of Health.—Dr. Hubley R. Owen, chief surgeon, medical division of the department of public safety of Philadelphia, has been appointed director of public health, succeeding Dr. Charles F. Nassau. Dr. Owen holds medical degrees from the University of Pennsylvania and Jefferson Medical College. He has been a police surgeon since 1907 and is professor of clinical surgery at the Woman's Medical College of Pennsylvania. In 1933 he was president of the International Association of Police and Fire Surgeons and Medical Directors of Civil Service Commissions of the United States.

Society News.—Dr. George F. Cahill, New York, addressed the Philadelphia Urological Society November 27 on "Tumors of the Adrenal Cortex Occurring in Adults." —Drs. William T. Lemmon and Stephen Dana Weeder addressed the Philadelphia Academy of Surgery December 4 on "Continuous Spinal Anesthesia" and "Mesenteric Adenitis" respectively. —Dr. Warfield T. Longcope, Baltimore, addressed the Pathological Society of Philadelphia December 14 on "Cardiovascular Reactions in Glomerular Nephritis." —The committee on maternal welfare sponsored a program on "Preventive Medicine as Applied to the Avoidance of Stillbirth and Care of the Newborn" at the meeting of the Philadelphia County Medical Society December 13. The speakers were Drs. Thaddeus L. Montgomery, Ralph M. Tyson, John A. Sharkey, Emily P. Bacon, Clayton T. Beecham, Arthur First and Irving J. Wolman.

Pittsburgh

Society News.—Dr. Ernest Perry McCullagh and Douglas Roy McCullagh, Ph.D., Cleveland, addressed the Pittsburgh Urological Association December 11 on "Clinical Use of Testosterone Propionate" and "Physiology of the Testes" respectively.

SOUTH CAROLINA

Society News.—Drs. Francis B. Trudeau, Saranac Lake, N. Y., and Cary Eggleston, New York, addressed the Pee Dee Medical Society, Florence, November 29 on early days of the fight against tuberculosis and on diagnosis and treatment of acute failures of circulation, respectively.—Dr. William F. Rienhoff Jr., Baltimore, addressed the Columbia Medical Society of Richmond County November 13 on "Present Status of Surgical Treatment of Peptic Ulcer" and Dr. David F. Adcock, Columbia, "Blood Transfusion."

Hospital News.—The Oconee County Medical Society met at the Oconee County Hospital, Seneca, recently to participate in the opening of a new clinical laboratory and hospital library. Dr. Edgar R. Pund, Augusta, Ga., made an address on "The Functions and Possibilities of the Small Hospital Laboratory"; Dr. William L. Pressly, Due West, president of the state medical association, described the work of the association and Dr. Gerald E. McDaniel, Columbia, epidemiologist of the state board of health, spoke on public health aspects of scarlet fever.

TENNESSEE

Society News.—Speakers at the meeting of the Dyer, Lake and Crockett Counties Medical Society, Dyersburg, December 6 were Drs. William C. Colbert on "Staphylococcal Infection"; Peter Whitman Rowland Jr., "Mechanism of Production of Clinical Irregularities of the Heart Beat," and Duane M. Carr, "Differential Diagnosis of Influenza." All are of Memphis.—Drs. John O. Manier and Duncan Eve Jr., Nashville, addressed the Madison County Medical Society, Jackson, November 7 on typhus fever and "Fractures of the Metatarsal and Phalangeal Bones" respectively.

WASHINGTON

Personal.—Dr. Leland E. Powers, formerly of Port Angeles, has been appointed health officer of Tacoma. Dr. Ralph Gregg of the U. S. Public Health Service, who has been in charge of the office since the death of Dr. Samuel M. Creswell in July 1938, has been transferred to the state health department in Olympia.

Hospital Seminar.—The Seattle General Hospital presented its annual seminar in internal medicine December 27-29 with Dr. John Walker Morledge, Oklahoma City, as the instructor. Among the subjects of lectures were congestive heart failure, hypertension, pneumonia, geriatrics, neoplasms of the lung, chemotherapy of infection (sulfapyridine and sulfanilamide). At a staff dinner Thursday evening December 28 Dr. Morledge recounted his medical experiences as a missionary in South Africa.

Society News.—Drs. George R. Marshall and Armin C. Rembe, Seattle, addressed the Thurston-Mason Counties Medical Society, Olympia, November 28 on "Recent Advances in the Diagnosis and Treatment of Minor Anorectal Conditions" and "Recent Advances in Pediatrics" respectively.—Drs. David Metheny and Kenneth K. Sherwood, Seattle, addressed the Kittitas County Medical Society, Ellensburg, November 20 on "Mortality Rates in Gastro-Intestinal Surgery" and "Treatment of Chronic Arthritis" respectively.—Dr. Joseph M. Aspray, Spokane, addressed the Spokane County Medical Society, Spokane, December 14 on "Carcinoma of the Cervix Uteri"; Dr. James T. Googe of the Farm Security Administration, on "Medical Care for the Resettlement and Migrant Family," and Mr. Jack M. Geoffrey, Seattle, on activities of the Washington State Medical Association.

WEST VIRGINIA

Society News.—Dr. Isidor S. Ravdin, Philadelphia, addressed the Ohio County Medical Society, Wheeling, December 15 on "Problems in the Management of Patients with Biliary Tract Disease."

WISCONSIN

University News.—Dr. Warner S. Bump, Rhinelander, addressed the convocation of the University of Wisconsin Medical School, Madison, November 23 on "Medical Opportunities in a Small Urban Community."

Society News.—Dr. James B. Herrick, Chicago, addressed the Medical Society of Milwaukee County December 14 on "What Not to Do in Heart Disease."—Dr. Arthur U. Desjardins, Rochester, Minn., addressed the University of Wisconsin Medical Society December 14 on "Radiation Therapy in Inflammatory Diseases."

Personal.—Dr. Marshall W. Meyer, formerly of Almond, has been appointed health officer of the ninth sanitary district with headquarters in Ashland.—Dr. Byron J. Hughes, assistant superintendent of the Winnebago State Hospital, Winnebago, has been appointed acting superintendent to replace Dr. Gilbert E. Seaman, who was recently made acting director of the division of mental hygiene in the new state department of public welfare.

District Meetings.—The First Councilor District Medical Society held its annual meeting in Beaver Dam November 12. A symposium on heart disease was presented by Drs. Harold E. Marsh and Chester M. Kurtz, Madison, and Francis D. Murphy, Milwaukee.—Speakers at the fall meeting of the Ninth Councilor District Medical Society in Wausau November 23 were Drs. Harold R. Fehland, Wausau, on "Peritoneal Vaccination for the Prevention of Peritonitis"; Eugene P. Adashek, Madison, "Thyroidosis," and William D. Stovall, Madison, "Virus Diseases."

PUERTO RICO

Medical Association Meeting and Election.—Dr. Oscar G. Costa-Mandry, Santurce, was elected president of the Puerto Rico Medical Association at the annual meeting December 8-10 in Santurce. Other officers elected were Drs. Eduardo R. Perez, Guayama, vice president; David E. Garcia, Rio Piedras, secretary, and Miguel F. Godreau, Guayama, treasurer. Guest speakers at the meeting were Drs. Richard A. Kern, Philadelphia, who discussed topics concerning internal medicine, and Jay Arthur Myers, Minneapolis, who discussed tuberculosis.

GENERAL

Trudeau School of Tuberculosis Postponed to Autumn.—The Trudeau School of Tuberculosis, which has for many years been held in May and June, will present its 1940 session beginning September 9 and closing October 4 at Saranac Lake, N. Y., and the supplementary and optional course at Bellevue Hospital, New York, October 7-19. The change was made to avoid conflict with the annual meetings in June of the American Medical Association, the National Tuberculosis Association and the American Association for Thoracic Surgery. Enrolments are now being received and application should be made to Roy Dayton, secretary, Saranac Lake, N. Y.

Examinations of Obstetric Board.—The American Board of Obstetrics and Gynecology announces that the general oral and pathologic examinations (part II) for all candidates (groups A and B) will be conducted by the entire board in Atlantic City, N. J., June 8-11, immediately prior to the annual session of the American Medical Association. Application for admission to group A, part II, must be on file in the secretary's office not later than March 15. Formal notice of the time and place of the examinations will be sent to each candidate. For further information and application blanks address Dr. Paul Titus, secretary, 1015 Highland Building, Pittsburgh (6).

Plan Pan-American Congresses of Eye and Ear Specialists.—The American Academy of Ophthalmology and Otolaryngology at its annual meeting in Chicago in October voted to sponsor a Pan-American congress of ophthalmology in conjunction with the 1940 meeting of the academy in Cleveland October 6-11. Drs. Conrad Berens, New York, Harry S. Gradle, Chicago, and Moacyr E. Alvaro, São Paulo, Brazil, were appointed to a committee to make plans for the congress of ophthalmology. Plans are also in progress for a congress of otolaryngology to be held concurrently. The U. S. Department of State has approved and promised full support to the meetings.

Ear, Nose and Throat Sectional Meeting.—The annual meeting of the Southern Section of the American Laryngological, Rhinological and Otolaryngological Society will be held at the Jefferson Hotel, Columbia, S. C., January 8-9. The speakers include:

Dr. Chevalier L. Jackson, Philadelphia, Technique of Direct Laryngoscopy for Removal of Benign Tumors and Biopsy.

Dr. Lewie M. Griffith, Asheville, N. C., Unilateral Exophthalmos Due to Sinus Disease.

Dr. Leroy M. Polvogt, Baltimore, Prevention and Treatment of Deafness in Children by Irradiation.

Dr. James M. Northington, Charlotte, N. C., Relationship Between Otolaryngological Practice and Practice in the Field of the

Dr. Wells P. Eagleton, Newark, N. J., Advances in the Treatment of

Dr. Hugh A. R. Kuhn, Hammond, Ind., Autoogenous Vaccines and the Newer Chemicals in 1,000 Cases of Otitis.

Dr. James W. Babcock II, New York, Effect of Sulfanilamide in the Treatment of Acute Otitis Media.

Society News.—The annual meeting of the North Pacific Surgical Association was held in Vancouver, B. C., November 17-18, with Dr. Alfred T. Bazin, Montreal, as guest speaker. Dr. Bazin discussed "Jaundice—Its Interpretation and Sig-

nificance," "Cancer of the Colon and Rectum" and "The Omphalomesenteric Duct—Perils of Persistence." Dr. Robert D. Forbes, Seattle, was elected president and Dr. William M. Wilson, Portland, Ore., secretary.—Mrs. Margaret Wells Wood, Springfield, Ill., has resigned as chairman of the public health division of the General Federation of Women's Clubs, and Miss Louise Morel of the Kentucky State Department of Health, Louisville, has been appointed to succeed her. Miss Morel has been chairman of public health in the Kentucky Federation of Women's Clubs for many years.

American Physicians Art Association.—The annual exhibit of the American Physicians Art Association will be held at the Belmont-Plaza Hotel, New York, June 9-15, which will be during the time of the annual session of the American Medical Association in that city. The entire top floor of the Belmont-Plaza Hotel, which is across the street from the Waldorf Astoria Hotel, will be turned over to the Physicians Art Association. Space will also be provided by Mead Johnson and Company in its space in the commercial exhibit, during the American Medical Association meeting, for some of the extraordinary items in the exhibit of the American Physicians Art Association. The New York Physicians Art Club will act as host to the American Physicians Art Association. Details of the exhibit plans may be had by writing to Dr. Abraham Wolbarst, 114 East Sixty-First Street, New York, or to the president of the American Physicians Art Association, Dr. Henry N. Moeller, 327 Central Park West, New York.

Proceedings of Congress on Microbiology.—The Report of Proceedings of the third International Congress of Microbiology, held in New York Sept. 2-9, 1939, is in preparation and will be ready for distribution in February or March. The volume, which will have about 900 pages, will contain the lectures given at the general sessions in full, abstracts and pertinent discussions of other papers and will include information concerning the functions and membership of the congress. Only a sufficient number will be printed to cover orders actually received at the time of publication. Individuals should send the price (\$5) to Kenneth Goodner, Ph.D., treasurer of the congress, Hospital of the Rockefeller Institute, York Avenue and Sixty-sixth street, New York. In the case of libraries, universities and scientific institutions, order forms will be accepted and bills will be sent at the time of delivery. Remittances from foreign countries should be in the form of a draft on a New York bank, by an international money order or in the currency of the United States.

The Francis Amory Prize.—The American Academy of Arts and Sciences, as trustee of a fund given by the late Francis Amory, directs attention to the Francis Amory Septennial Prize which is to be awarded in 1940. The award will be made for conspicuously meritorious work in the past seven years "through experiment, study or otherwise, in the treatment and cure of diseases and derangement of the human sexual generative organs in general and more especially for the cure, prevention or relief of the retention of urine, cystitis, prostatitis, etc." While the donor wished to reward the discovery of any new method of treatment, he expressly authorized that the prize might be given to any author who might have contributed any theoretical or practical treatise of extraordinary or exceptional value and merit on the anatomy of these organs or the treatment of their diseases. The 1940 award, which will be the first, will exceed \$10,000 and may be divided at the discretion of the academy among several nominees. While formal nominations are not expected and no essays or treatises in direct competition for the prize are desired, the committee invites suggestions. Communications on this subject should reach the committee not later than May 15 and should be addressed in care of the American Academy of Arts and Sciences, 28 Newbury Street, Boston. Dr. Roger I. Lee, Boston, is chairman of the committee.

American Doctors on Postage Stamps.—The Postmaster General has announced the first day sale dates and colors of the thirty-five new postage stamps in the Famous American series soon to be issued by the United States Post Office Department. Among the thirty-five famous Americans to be thus honored are the names of two physicians, Dr. Crawford W. Long and Dr. Walter Reed (THE JOURNAL, Nov. 11, 1939, page 1816). The Crawford W. Long stamp will be a red 2 cent stamp, and the first day sale will be at Jefferson, Ga., April 8. The Walter Reed stamp will be a blue 5 cent stamp, and the first day sale will be at Washington, D. C., April 17.

Collectors are advised that in order to receive the official first day postmark covers must bear postage at the first class rate, whether sealed or unsealed, and allowance must be made for two 2 cent stamps on each cover of the 2 cent denomina-

tion, except those addressed for local delivery, on which 2 cents postage will suffice. The post office department requests that covers for the various sets be not forwarded to the respective first day sale houses in advance of thirty days prior to the date of first day sale. The entire thirty-five stamps of this series will be arranged vertically and printed in sheets of seventy by the rotary press from convertible electric eye plates. Each stamp will be 85/100 by 98/100 inch in size.

Deaths in Other Countries

Charles Vaillant, who spent his life in x-ray research in the laboratory of the Lariboisière Hospital in Paris and suffered many amputations as a result of exposure to the rays, died in the Hotel des Invalides, Paris, December 4, aged 67. He was honored by France with the cravate of the Legion of Honor, the Prix Auddeford of 15,000 francs awarded to those injured in the pursuit of science and the gold medal of the city of Paris, and also received the Carnegie Hero Medal.

CORRECTION

Special Volume to Honor Dr. Schaumann.—In THE JOURNAL, Sept. 30, 1939, page 1340, a news item announced a jubilee number of *Acta medica Scandinavica* to be published in honor of Dr. Jörgen N. Schaumann. Dr. Israel F. Holmgren, Stockholm, Sweden, editor of the Scandinavian journal, writes that the publication in honor of Dr. Schaumann will not be an issue of the journal but a separate volume made up of articles first published in the periodical. According to the original announcement, articles from the *Acta dermatovenereologica* are also to be included in the book.

Government Services

Public Health Service Officers Sent to Finland

Dr. Vance B. Murray, recently stationed in Berlin, and Dr. Herbert A. Spencer, who has been in Paris, have been dispatched by the U. S. Public Health Service to Finland at the request of the Finnish Red Cross, the New York Times reported December 22. It was believed that Finnish authorities feared the introduction of typhus as a result of the Russian invasion, although no information was given that the disease had broken out.

Examination for Appointments in Army Medical Corps

The War Department announces an examination March 18-22, both dates inclusive, for appointments as first lieutenant in the Medical Corps, U. S. Army, to fill vacancies occurring during the remainder of this fiscal year. The examination is open to all male graduates of acceptable medical schools in the United States and Canada who have completed one year's internship in an approved hospital and who will not be over 32 years of age at the time it will be possible to tender a commission. Boards of officers will convene in cities throughout the United States. Full information and application blanks will be furnished on request addressed to the Adjutant General, War Department, Washington, D. C. Applications will not be considered if received in the War Department after March 2.

Radium Loaned to Hospitals

Thirteen hospitals will receive loans of radium from the U. S. Public Health Service within the next few weeks, it was announced December 4. The grants were made in cooperation with state departments of health and cancer commissions. The terms stipulate that the institutions must make no charge to the patients for use of the radium, giving preference to those in the lowest income groups. High standards for the personnel administering the treatment are also required as a condition of the loan. The hospitals to receive the radium are: Ellis Fischel Hospital, Columbia, Mo.; El Paso City-County Hospital, El Paso, Texas; Baylor University Hospital, Dallas, Texas; Hillman Hospital, Birmingham, Ala.; St. Joseph Infirmary, Louisville, Ky.; Robert Winship Clinic, Emory University, Ga.; Greenville General Hospital, Greenville, S. C.; Tri-County Hospital, Orangeburg, S. C.; Broadlawns General Hospital, Des Moines, Iowa; Indianapolis City Hospital, Indianapolis; University of Pittsburgh; New Britain General Hospital, New Britain, Conn., and Receiving Hospital, Detroit.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 2, 1939.

Blood Transfusions During the War

Arrangements have been made for blood transfusion in the war on a scale far greater than it has ever been used before. Since the outbreak of war considerable use has been made of stored blood. Reports that stored blood has a greater tendency to produce reactions than fresh blood has caused some apprehension. The Medical Research Council, which is in charge of the storing of blood, has therefore issued a memorandum, signed by the directors of the four blood transfusion depots (located for greater safety near, instead of in, London), Drs. H. F. Brewer, M. Maizels, J. O. Oliver and Janet Vaughan. They believe that some of the reactions may have been due to faulty technic in the preparation of apparatus, withdrawal, storage or administration of blood, or the use of unduly hemolysed blood. From the emergency depots mentioned, blood has been distributed to hospitals in and near London where the methods of collection and storage have been those recommended by the Medical Research Council. The reports have been uniformly satisfactory, although one observer, while appreciating the immediate restorative use in collapsed and exsanguinated patients, suggests that the tonic and anticoagulant value is less than that of pure blood. In all 219 pints of blood were given in forty-one different hospitals to 160 patients. The maximum received by one patient was 6 pints, given as a continuous drip. The blood varied in age from a few hours to 3½ weeks. Group O was used in the majority of cases but groups A and B were provided on request. Slight rigors were produced in ten cases, but in several of these it was found that the blood had been given cold. In three cases there was transient jaundice. There was no fatality. The following points are stressed. 1. The anticoagulant solution should be prepared from freshly distilled water from a clean still, and it should be filtered and autoclaved immediately. 2. All apparatus must be scrupulously clean. A swab or elongated brush should be passed through the rubber tubing, as mere washing under the tap is not sufficient to remove adherent clot. When fresh from the manufacturers, tubing should be washed to remove the French chalk. 3. Strict surgical asepsis should be observed in collecting blood. 4. Storage should be at 2 to 4 C. 5. Blood showing undue hemolysis (extending more than 1 cm. into the citrated plasma) should not be used. 6. Corpuscles and plasma may be mixed before transfusion by as little and as gentle agitation as possible. 7. The blood should be warmed to body temperature before use, but not higher than to 104 F. The elimination of grouping errors as a cause of reaction is assumed.

Hormone Standards

The third international conference on the standardization of hormones, held at Geneva last year, decided that international standards should be established for the hormones of the anterior pituitary and the analogous substances found in the urine and serum, and that their preparation, dispensing and storage should be undertaken by the National Institute of Medical Research, London. The first of these new standards—that for the gonadotropic substance of human urine of pregnancy—was established last May. Two others have now been prepared for the gonadotropic substance of pregnant mare's serum and the lactogenic substance of the anterior pituitary. The former standard was prepared from material provided by five manufacturing firms in four different countries, and the latter by seven firms and two research institutes in five countries. A mixture was made of the materials for the preparation of the standards, which

were dispensed in the form of tablets containing 100 international units. The standard for the gonadotropic substance of pregnant mare's serum is dispensed in sealed tubes containing 25 mg. tablets. The international unit is defined as the specific gonadotropic activity contained in 0.25 mg. of the standard preparation. The standard for prolactin is dispensed in 10 mg. tablets. The international unit is defined as the specific activity contained in 0.1 mg. of the standard preparation. As in the case of the other international standards and vitamins, these standards are held on behalf of the Health Organization of the League of Nations, at the National Institute for Medical Research, London. They are thence distributed to national control centers in other countries, whence they are sent to laboratories, institutes and research workers.

Fatal Effect of the Use of Streptococcus Toxin for Immunization Against Scarlet Fever

In the *Journal of the Royal Naval Medical Service* Surgeon-Commander O. D. Brownfield reports the case of a boy, aged 13, who with eighteen other naval cadets received his first immunizing injection of scarlet fever streptococcus toxin (500 skin test doses) at 7 p. m. There was no immediate ill effect. He turned in, as did several of the other boys, and felt rather sick—a usual occurrence after these injections. At 8:45 he was seized with acute abdominal pain. Every two or three minutes he had attacks of violent abdominal colic during which the abdominal wall became brick hard. He was pale, cold and shocked. Between the spasms of colic the abdomen appeared normal. Under warmth and rest the spasms became less frequent, and by 2 a. m. the pain had ceased and the shock was less. But by 7:30 it was obvious that ground was being lost. Coramine was given with little or no benefit. Soon afterward epinephrine (3 minims) was injected and the volume of the pulse increased for a short time. Rectal saline solution with dextrose was not retained long enough to have any effect. The resultant motion contained a good deal of mucus. During the forenoon right-sided heart failure was obvious. A repetition of the epinephrine with strophanthin had no effect. At 2:15 p. m. he collapsed, dying in a few minutes. The necropsy showed a thymus gland weighing 1¾ ounces, which was thought to confirm the diagnosis of anaphylaxis.

Surgeon-Commander Brownfield adopted immunization against scarlet fever because it enabled an attack to be treated as a mild illness and the patient returned to duty after from ten to fifteen days. The reactions were not severe and the loss of time from them was little compared with the ordinary isolation for forty-two days. But this fatality has altered Brownfield's view, as he does not think that the benefits of immunization justify risking such a tragedy, however unlikely.

PARIS

(From Our Regular Correspondent)

Nov. 25, 1939.

Racial Vitality

René Martial began his course of lectures at the Faculty of Medicine of Paris with a lecture on racial vitality and stability. He said that there is no race today, only race blends, which are the "totality of a population whose latent or manifest characteristics, particularly the characteristic of language, and whose anthropobiologic traits constitute a distinct historical unity." Race, so defined, is a psychologic, biologic and historical triangle. This definition of race is based on language, customs, historical continuity, morphology and a stability analogous to the self preservation instinct of the individual extended to include a whole population. Martial compares this stability to a ferment, slumbering at times but always present. Race is exposed partly to violent, partly to slowly acting, impacts. The former are transitional and include wars, massacres, flights, emigrations and revolutions. The latter are

more dangerous and include slavery, ethnic minorities and forced shifts of population. Race is at times in a state of mixture, one that does not end in union, any more than water and oil will unite when agitated in a glass of water.

Race is like the trunk of a tree which emerges from the ground at a given time in history and thereafter remains fixed. The moment of fixation is often lost in history. Peoples with a general distribution in a restricted geographic area and existing there from time immemorial are called "primordial" by Baschmakoff. In spite of violent upheavals and the engrafting of foreign elements, the original stock retains its unity. Martial does not think that hostile invasions annihilate races. They are less dangerous than emigrations or revolutions, for these kill the leaders. However, the real menace to race survival is not the destructive forces but those that change the character of a people. Conquests are to be feared if they introduce elements of a superior civilization; immigrations likewise, if they continue.

Blood is one of the most definite characteristics of a race, whereas the shape of the skull does not seem to be an ethnic indicator. Martial adduced numerous proofs taken from the history of several European races and of those living in other continents to support his statements. Mixed breeds tend to disappear because of the reappearance of the characteristics of their ancestral racial traits. According to Davenport, miscegenation causes disharmonies between physical and mental qualities and with the environment. There are incompatible blood strains. "Heredity shock" causes deterioration, especially mental deterioration. This accounts for the evolution of the half-breed, often a social failure and hence often an antisocial element. If a nation must admit immigrants, he said, it is indispensable that it be done under strict and continuous supervision.

Granular Polymorphonuclears in Tuberculosis

The paper read by Raymond Benda and D. A. Uruquia before the Société médicale des Hôpitaux de Paris and based on 1,500 cases was an important contribution to the methods for the detection of tuberculosis. Granulations are present in from 98 to 100 per cent of the polymorphonuclear neutrophils. They are easy to discover. In 833 ascertained cases of tuberculosis with bacilli, granulation of polynuclears occurred in almost all cases (828). The five cases in which this was not observed were cases with a fibrous tendency. They were found only in four of 587 apparently normal persons. In cases of tuberculosis without bacilli, inactive for many years, observations disclosed the "doubtful" type fifty-five times. There was no clear parallelism between granulation and tuberculin tests.

BERLIN

(From Our Regular Correspondent)

Nov. 18, 1939.

The Promotion of German Pharmaceuticals

For some time efforts have been made in Germany to replace foreign medicaments with those produced at home. The reason is obvious. During the recent meeting of German druggists it was reported that great progress had been achieved in producing albumin, formerly imported in great quantities, from the serum of cattle. In the replacement of cocoa butter a new raw material, called postonal, has been created by polymerization of ethyls. Hardened walnut oil and oils obtained from the seeds of fir and pine cones are said to be successful substitutes for lard as a foundation for ointments. Aluminum is now used in Germany in place of tin for tubes and so on. Artificial caoutchouc, called buna, is much more resistant to benzene than natural rubber and can therefore often be used where natural rubber is not serviceable. Surgical gloves made of buna are said to be more durable. Special attention has been devoted to the cultivation of medicinal plants. Investigations supported by several institutions show that, by the systematic cultivation of selected kinds of peppermint, valerian, marjoram, coriander

and white mustard and of other native herbs, the importation of foreign drugs can be reduced. The regions round about Berlin are to be placed under herb cultivation, use being made chiefly of uncultivated soils. The work is to be done by inmates of hospitals and sanatoriums as a form of work therapeutics. The first harvests from the present herb fields under cultivation yielded hundreds of kilograms of dry herbs. In other parts of Germany plans are being made to have children gather medicinal herbs.

The German council of economic management, a sort of governmental recruiting body for German business, recently stressed the fact that popular enlistment in the use of medicaments is not intended to encourage the buying or the permanent use of any particular drug. The council asserts that drugs are never indifferent and are of use only when taken on medical advice. The excessive use of anodynes and hypnotics is to be regarded as harmful to national life. Advertised baby foods should not engender the idea that they are as good as breast milk or a good substitute for it.

Multiple Sclerosis

The question of multiple sclerosis was recently discussed in the meeting of neurologists and psychiatrists of southwestern Germany. Multiple sclerosis, first described clinically a hundred years ago, is one of the most frequent organic nervous diseases. A constant increase has been steadily reported of late; its cause is unknown. The first speaker, Hallervorden, of the Psychiatric Research Institute in Berlin-Buch, pointed out that there is some support for ascribing the disease to an infectious origin in the extensive inflammations discovered in the meninges. He took the point of view that in multiple sclerosis a substance injurious to the myelin exudes from the vessels as well as from the spinal fluid into the brain; he rejected the allergic theory.

Georg Schaltenbrand, neurologist, of Würzburg, said that multiple sclerosis decidedly was not hereditary, even though a certain predisposition existed. Schaltenbrand's investigations of lipases and phosphatases in the spinal fluid did not yield positive results regarding the theory of the diffusion of myelolytic toxins. Moreover, the theory of allergic reaction failed to be supported by cutaneous reactions in the Laignel-Lavastine-Koressios therapy. The interpretation of multiple sclerosis as metatuberculosis could not be entertained.

In the discussion, Paul Martini, clinician, of Bonn, said that he had tried out the Laignel-Lavastine-Koressios serum therapy on a large scale and found the results unfavorable. He never observed a complete recovery. A peculiarly subjective effect, however, of this serum therapy was observed. Martini does not regard the new French serum as specific.

Birth Rate, Sterilization and Abortion

As previously reported, the birth rate is on the increase. This tendency has continued through the first half of 1939. One can judge of the strong propaganda pursued from the report in Goering's *National-Zeitung*, of Essen, May 2, 1939, regarding the May celebration in Berlin: "Opposite the Führer's reviewing stand, girls belonging to the girls' clubs, the counterpart of the Hitler youth, removed their jackets, the letters on their white blouses spelling the words 'We belong to you.'" This girlish affection, according to a report from Austria, was surpassed by that of women carrying a transparency during a parade with the inscription "Leader, at thy command we will bear thee children."

The supervision exercised over physicians because of the practice of abortions occasionally leads to unjustified arrests in Germany. A gynecologist in Brunswick, 38 years old, had been arrested in November 1935 because he sterilized women without medical necessity. He was acquitted in January 1937 but the judgment was revoked. In July 1938 he was condemned to four years in the penitentiary and prohibited from

practicing his profession for five years. On orders of the supreme courts of the reich the case was reexamined. After a trial of ten days he was acquitted. He had been in custody for almost two years. The attorney general has now accepted the verdict, making the decision final.

Promoting Pulchritude Under Nazism

Recently Dr. Ley, state director of organizations, dedicated the "House of Beauty Culture" in Berlin. Selections are to be made from barbers and "beauty parlor" assistants for special training in promoting pulchritude. In his address Ley said that it was Hitler's great accomplishment to accustom the people again to a sense of what the beautiful really is. He defined the term "beautiful" in these words: "What benefits me and my people is beautiful, whatever makes me weak or ill is ugly" as an esthetic criterion. Furthermore, he said, "party affiliation and the army are the institutes of beauty for men. In the case of women, many things are still lacking to secure charm and gracious living to them. We do not want the athletic type of woman, neither do we want the Gretchen type."

Photography of the Bladder

Endoscopic pictures made so far have proved unsatisfactory, partly because they have been so small. Projections on a large scale are difficult to make. For this purpose the opening has to be enlarged so that, under magnification, the same visual field is presented which one has in direct endoscopic observations. Dr. A. Gütgemann, of the University of Bonn, uses a Leica employing the normal mirror reflex arrangement, an intermediate optical device constructed on the analogy of the usual micro-arrangements and a photocystoscope. The diameter thus attained amounted to 18.5 mm. The colored cystoscopic views obtained satisfy the requirements as to clearness, distinct outline and color reproduction and offer the possibility of fixing and controlling objective observations.

The colored single view is no longer satisfactory, since it cannot represent the movements of the walls of the bladder as they appear in endoscopic examinations. Cinematography is the key to this problem. Through further development of cystoscopic lamps, adjustment of picture frequency and the use of specially constructed cameras, the interior of the bladder can be viewed cinematographically. Dr. Gütgemann has already made such films showing specimens both of the normal and of the pathologic activity of the ureter; also hematurias, varicose vascular enlargements in a papilloma, urinary calculi and ureteral methylene blue excretions.

Postgraduate Medical Training

Dr. E. Kittler spoke before the Medical Society of Berlin on the principles that should govern the production of films intended for the postgraduate training of physicians. Subjects selected for such films should be taken especially from the field of minor and major operations and must be chosen so that the outlook of the general practitioner with regard to therapeutic possibilities is enlarged. The effects and the success of surgical operations are more important in films than the showing of surgical technic. Minor gynecologic views and obstetric demonstrations are important also. The field of internal medicine has not yet been opened up to film production as it should be. Films, he said, could promote the diagnostic knowledge of the physician. A characteristic remark was "The widened sphere of duties demands of the German physician an increased knowledge in fields which the national socialist way of interpreting the world (*weltanschauung*) was the first to introduce." He proposed as supplementary film subjects those that dealt with heredity and heredity cultivation, with the synthesis of medicine taught in the schools and that taught by nature and with views of processes that deal with the vital needs of factory employees at work.

Tuberculous Patients and Air Raids

THE JOURNAL, May 6, page 1845, reported measures taken to protect hospitals in air raids. The state department for aviation jointly with the department of the interior has released the following regulations: "Patients with an actively infective pulmonary tuberculosis are not to enter stations set aside for air protection whenever air raid drills are practiced. All other patients with pulmonary tuberculosis capable of spreading infection are to be exempted from seeking air raid shelters when air raid drills are ordered. 'Carriers' of typhus, paratyphus and dysentery may remain in air raid shelters only for a short time."

ITALY

(From Our Regular Correspondent)

Nov. 15, 1939.

Surgical Treatment of Chronic Cystitis

Professor Pieri, in a lecture before the Società Medica di Friuli, reported his method for the surgical treatment of painful chronic cystitis. He proposed, in 1926, resection of the presacral nerve through which motor and sensory nervous fibers reach the bladder. Section of the nerve causes hypesthesia of the mucosa of the bladder, decreases the action of the sphincter and reinforces that of the detrusor muscular fibers of the bladder with consequent easy emptying of the bladder. The speaker has resorted to the procedure in fifteen cases, and the subjective disturbances were improved in all but two. In the two cases in which treatment failed, death occurred from bronchopneumonia and tuberculous meningitis, respectively.

Extrahepatic Echinococcus Cysts

Professor Businco, in a lecture recently delivered to the Società di Gastro-enterologica of Rome, classified certain types of extrahepatic echinococcus cysts in the following groups: (1) hydatid cysts of either the mouth, the fauces, the salivary glands or the tonsils, (2) those of the pharynx, esophagus, cervical lymph nodes and thyroids, (3) those of the esophagus and periesophagus in the thorax and (4) of intra-abdominal, pelvic peritoneal and retroperitoneal development. In the larger number of cases the pathogenesis is hematogenic. Echinococcosis of the lung, secondary to that of the digestive tract, takes place either through the lymphatics or through the inhalatory route. Professor Gamberini reported a case of echinococcosis of the pancreas with compression of the bile ducts.

Malignant Granuloma of Digestive Tract

Drs. Gamna and Pino, in a lecture recently delivered to the Società Gastro-enterologica of Rome, discussed malignant granuloma of the digestive tract. The first Italian case of malignant granuloma of the intestine was reported twenty years ago by Professor Gamna, of Turin University. Gamna's description contributed to the general acceptance of malignant granuloma of the intestine as a disease in itself. Many cases have since been reported. Malignant granuloma of the intestine is a clinical form of malignant granuloma of the abdominal structures, the three clinical forms of which are the gastro-intestinal, retroperitoneal and hepaticosplenic. The majority of cases of malignant gastrointestinal granuloma which have been reported were advanced cases. The type of the lesion may be either ulcerative or tumoral. The lesions of either the ulcerative or the tumoral forms are multiple in both the stomach and the intestine. Gastrointestinal malignant granuloma shows an early involvement of the adjacent lymph nodes. A microscopic study of the involved gastrointestinal structures shows that the disease originates in the mucosa and infiltrates the other layers of the gastrointestinal walls. The main clinical symptoms are (1) meteorism, local pain and disturbances of digestion and defecation and (2) anemia, loss of weight and sometimes fever and cutaneous manifestations. Late in the

development of the disease a segment of the gastrointestinal tract is predominantly involved and the clinical forms can be differentiated into esophageal, gastric or intestinal. The differential diagnosis is made with gastrointestinal tuberculosis, tumors, gastric syphilis, amebiasis and actinomycosis of the cecum or of the stomach. The prognosis was considered up till now as fatal, regardless of the treatment that was resorted to. The speakers emphasized the importance of early diagnosis and the value of early surgical intervention, which gives satisfactory results if made while the disease is still restricted to a given local area.

Society Reunion

The Società Medico-Chirurgica di Pavia met recently. Professor Bignami discussed the diagnostic value of lymphography, by which the most minute details of the lymphatic system can be observed. The speaker used thorium dioxide sol as a contrast substance. The subcutaneous route gives satisfactory results, provided the injection is made under pressure in compact tissues containing branches of the main lymphatic vessels, such as the tips of the fingers. The best results are obtained by making the injection into the lymph nodes. By this technic the morphology of the nodes can be studied and the afferent and efferent lymphatic channels can be visualized.

Professor Leinati discussed the influence of scars in the development of experimental tumors. He made applications of a 1 per cent oily solution of benzopyrene or methylcolantrene on the skin of rats. He found that tumors from application of the solution develop more rapidly and in a larger percentage of cases when the solution is applied on malformed scars than on either normal skin or healing ulcers.

Professor Donati reported a study of various methods commonly resorted to for the diagnosis of the functions of the kidneys. He made observations in several cases of closed trauma of the kidney and found that chromocystoscopy and catheterization of the ureters are the procedures of more value than any others for diagnosing the functioning of traumatized kidneys. Descending pyelography may give erroneous results but can be resorted to either when other functional tests cannot be performed or as a complementary test to other functional tests. It is advisable to resort systematically to descending pyelography during the first few hours which follow renal trauma, as the test is harmless and simple.

Treatment of War Wounds

Prof. Nicola Leotta, head of the Clinica Chirurgica di Palermo, lectured recently before the physicians of the army in Palermo on surgical treatment of war wounds. At the outbreak of the World War the predominant criterion of treatment of wounds was that of expectation after disinfecting the wound. Disinfection was carried out at first aid stations on the front line, after which the wounded were transferred to hospitals farther back. Frequently infection developed. A large number of soldiers, even those wounded in the limbs, were lost as fighting units because of the long evolution of the wounds after infection. As the knowledge of modern war wounds developed, the criteria for the treatment of wounds changed and surgical centers were organized. Bacteriologic and clinical researches showed that bacteria enter almost all wounds, although infection, devitalization of tissues and toxemia did not immediately develop. If there is ample surgical removal (exeresis) of the involved tissues during the safe period, infection is prevented or at least attenuated. The period between the time of the wound and the operation should be very short in abdominal and thoracic wounds and little longer in cranial wounds. The eight hour limit can be extended sometimes without risk. However, far from certain time limits the treatment which is based on surgical asepsis (and by which an immediate or almost immediate suture can be made) cannot

be resorted to because of the presence of infection. Definite treatment of wounds with cavitation is a task of expert surgeons. The speaker gave the details of the treatments which can be resorted to in thoracic wounds (either closed or in communication with external surfaces) and also in abdominal wounds. The criterion that surgical intervention is the only hope in abdominal wounds has to be followed. The earlier the operation, the greater the probabilities of success. Of soldiers with abdominal war wounds, the speaker had 60 per cent of recoveries in the group who had the operation during the first four hours after occurrence of the wound, 50 per cent in the group of those who had the operation during the first six hours and 10 per cent in the group who had it between eight and twelve hours. The operation consists in removal of all tissues which have been in contact with the bullet and foreign material and immediate primary suture of the wound, if the operation is performed in the course of the first six hours, or otherwise, open treatment with peritoneal drainage. The speaker discussed the complicated problem of logistics in relation to surgical treatment of war wounds with cavitation.

Health and Social Insurance

Modern Italian social insurance covers both insured workers and their families. Insurance against tuberculosis, which became effective ten or twelve years ago, has at present more than 20 million insured persons. It has now fifty-one hospitals, and twelve more are under construction. Hospital care was given during 1938 to 46,512 persons with a total number of 9,870,663 days of hospital care, 3,310,979 of which were days given to members of families of those insured. In the course of the first ten years of the insurance center 309,166 patients had hospital care given by the insurance center with 57,000,000 days of hospitalization. The centers of insurance against invalidism had increased the number of stations for care of convalescent patients, dispensaries against trachoma and centers against adenoidism. During 1938, climatic treatments at stations of mineral waters were given to 24,294 insured workers with a stay of fifteen consecutive days for each patient. In the last ten years 108,669 patients had had care at the stations. In this number were 45,273 women and more than 15,000 children. A center for convalescents was recently opened in Bologna and another will soon open in Naples.

Antitrachoma centers treat either insured or uninsured patients. In 1938, 35,327 persons were cared for. There are twenty-one centers for consultation of working mothers in various cities. In 1938, 12,435 mothers received medical care or were given medical advice. In the last ten years, 81,649 working mothers visited the centers for consultation.

Marriages

RODERICK F. MACDOUGAL, Cedar Rapids, Iowa, to Miss Mildred Greaves, of Sherman Mills, Maine, Nov. 4, 1939.

BENJAMIN V. KAUFMAN, Carbondale, Pa., to Miss Eleanor Klein, of Scranton, at Fort Worth, Texas, Oct. 10, 1939.

JAMES WILKINSON JERVEY to Mrs. Maude Earle Hammond Lewis, both of Greenville, S. C., in October 1939.

EDWARD STARR MORRIS, Philadelphia, to Miss Jane Havens Shannonhouse, of Merchantville, N. J., recently.

ROYCROFT C. JONES, Philadelphia, to Mrs. Carolyn P. Atkinson, of West Oak Lane, Pa., Nov. 15, 1939.

WILLIAM H. WRIGHT to Miss V. Ruth Emmerson, both of Chicago, in Bellwood, Ill., Aug. 4, 1939.

CYRIL LEWIS HYATT, Little Rock, Ark., to Miss Wanda White, of Van Buren, Nov. 5, 1939.

ALBAN PAPINEAU to Miss Jeanette Edwards, both of Plymouth, N. C., Aug. 30, 1939.

ROBERT H. GROH to Miss Pauline Satterwhite, both of Washington, D. C., in October 1939.

Deaths

Isidor Harrison Tumpeer ☉ Chicago; Rush Medical College, Chicago, 1916; formerly clinical assistant in pediatrics at the Northwestern University Medical School; senior lieutenant in the U. S. Navy during the World War; member of the American Academy of Pediatrics; president-elect of the Chicago Society of Allergy; aged 46; chief of staff of the pediatric department and head of the children's allergy department at the Michael Reese Hospital, where he died, Nov. 29, 1939, of hypertension and heart disease.

John Rogers, New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1891; member of the Medical Society of the State of New York; professor of clinical surgery emeritus, Cornell University Medical College, and professor from 1909 to 1920; fellow of the American College of Surgeons; consulting surgeon to the Bellevue, Booth Memorial, Memorial and St. Francis hospitals, and Hospital for the Ruptured and Crippled; aged 73; died, Nov. 19, 1939.

Edgar Allen Pray, Valley City, N. D.; University of Pennsylvania Department of Medicine, Philadelphia, 1894; member of the House of Delegates of the American Medical Association, 1920, 1922, 1923, 1925, 1927 and 1928; member and past president of the North Dakota State Medical Association; past president of the North Dakota Anti-Tuberculosis Association; fellow of the American College of Surgeons; aged 71; died, Nov. 16, 1939, in a hospital at Fargo of cerebral hemorrhage.

Jacob Ambrose Storck ☉ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1893; at one time professor of diseases of the digestive system and professor of gastro-enterology emeritus at the Tulane University Graduate School of Medicine (New Orleans Polyclinic); served at various times and in various capacities on the staffs of the Charity Hospital and the Eye, Ear, Nose and Throat Hospital; aged 73; died, Nov. 16, 1939.

Milo Wilson, Gallipolis, Ohio; Ohio Medical University, Columbus, 1896; member of the Ohio State Medical Association; member of the Radiological Society of North America; formerly secretary of the Gallia County Medical Society; served at various times on the staffs of the Ohio Hospital for Epileptics and the Athens (Ohio) State Hospital; on the staff of the Holzer Hospital; aged 68; died, Nov. 9, 1939.

Howard Tennyson Child, Bristol, Maine; Jefferson Medical College of Philadelphia, 1909; served with the U. S. Navy during the World War; at one time permanent subdistrict medical officer of the local office of the U. S. Veterans' Bureau, Burlington, Vt.; formerly clinical director of the New Hampshire Hospital for the Insane, Concord; aged 55; died, Nov. 5, 1939.

John Algernon Cavanaugh ☉ Chicago; College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1904; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; formerly on the staff of St. Luke's Hospital; aged 60; died, Nov. 17, 1939, of metastatic carcinoma of the brain.

Collin Foulkrod ☉ Philadelphia; Jefferson Medical College of Philadelphia, 1901; assistant professor of obstetrics at his alma mater; member of the American Gynecological Society; fellow of the American College of Surgeons; past president of the Philadelphia Obstetrical Society; on the staff of the Presbyterian Hospital; aged 65; died, Nov. 16, 1939.

Edward Karl Allis, North Little Rock, Ark.; Hahnemann Medical College and Hospital, Chicago, 1905; Indiana University School of Medicine, 1908; member of the American Psychiatric Association; on the staff of the Veterans Administration Facility; served during the World War; aged 58; died, Nov. 25, 1939.

Herman Bryden Allyn ☉ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1885; fellow of the American College of Physicians; past president of the Philadelphia County Medical Society; on the staff of the Philadelphia General Hospital; aged 79; died, Nov. 6, 1939.

Hugh Alexander Stewart, Flint, Mich.; Detroit College of Medicine, 1906; member of the Michigan State Medical Society; at one time state senator, member of the board of education and state board of registration in medicine; aged 57; died, Nov. 25, 1939, of coronary occlusion and myocarditis.

W. Edwards Schenck ☉ Cincinnati; Miami Medical College, Cincinnati, 1891; fellow of the American College of Surgeons; served during the World War; aged 78; died, Nov. 26, 1939,

in the Christ Hospital of arteriosclerosis, myocarditis, hemiplegia and prostatic hypertrophy.

Smith Owen Dexter ☉ New York; Harvard Medical School, Boston, 1933; research fellow on the staff of the Memorial Hospital for the Treatment of Cancer and Allied Diseases; aged 32; died, Nov. 26, 1939, in Annapolis, Md., of coronary occlusion and sclerosis.

Antonio Gentile ☉ Newport News, Va.; University of Virginia Department of Medicine, Charlottesville, 1927; fellow of the American College of Surgeons; aged 36; on the staff of the Elizabeth Buxton Hospital, where he died, Nov. 16, 1939, of coronary occlusion.

Francis James Murray ☉ New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894; veteran of the Spanish-American War; formerly police surgeon; aged 66; died, Nov. 16, 1939, of heart disease.

George Flamm ☉ Brooklyn; Long Island College Hospital, Brooklyn, 1916; served during the World War; on the staffs of the Roosevelt, Cumberland, Beth Moses and Greenpoint hospitals; aged 45; died, Nov. 27, 1939, in the Brooklyn Hospital.

Frederic Joseph Peirce, Pueblo, Colo.; Harvard Medical School, Boston, 1898; member of the Colorado State Medical Society; served during the World War; past president of the Pueblo County Medical Society; aged 65; died, Nov. 15, 1939.

Joseph Whitefield Smith ☉ Bloomington, Ill.; Keokuk (Iowa) Medical College, 1891; fellow of the American College of Surgeons; aged 76; on the staff of the Brokaw Hospital, where he died, Nov. 19, 1939, of pneumonia and heart disease.

Norman Bethune, Montreal, Que., Canada; University of Toronto Faculty of Medicine, 1916; member of the American Association for Thoracic Surgery; served during the World War; aged 49; died, Nov. 25, 1939, in China of septicemia.

Henry Rudolph Roether, Perrysburg, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1893; formerly mayor, and member of the board of education; aged 72; died, Nov. 13, 1939, of cerebral hemorrhage.

John Howard Buchanan ☉ Memphis, Tenn.; University of Tennessee Medical Department, Memphis, 1932; aged 33; died, Nov. 8, 1939, in the King's Daughters Hospital, Greenville, Miss., of injuries received in an automobile accident.

Henry Rupert Derome, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1912; member of the American Association for Surgery of Trauma; on the staff of St. Luke's Hospital; aged 57; died, Nov. 15, 1939.

Edmund Warner Fisher ☉ Brooklyn; Cornell University Medical College, New York, 1925; aged 44; on the staffs of St. John's Hospital and the Peck Memorial Hospital, where he died, Nov. 29, 1939, of rheumatic heart disease.

Edward Conway Maphis, Mardela Springs, Md.; University of Virginia Department of Medicine, Charlottesville, 1926; served during the World War; aged 41; was found dead, Nov. 15, 1939, of an overdose of sleeping potion.

Lewis Nelson Eames ☉ Rome, N. Y.; University of Buffalo School of Medicine, 1905; for many years health officer of Rome; on the staff of the Rome Hospital and Murphy Memorial Hospital; aged 58; died, Nov. 16, 1939.

James Wilson Cassell ☉ New York; Bellevue Hospital Medical College, New York, 1889; on the staffs of the Manhattan Eye, Ear and Throat Hospital and the Knickerbocker Hospital; aged 76; died, Nov. 4, 1939.

Robert Cooke Bicknell, Washington, D. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; Jefferson Medical College of Philadelphia, 1895; aged 77; died, Nov. 16, 1939, of arteriosclerotic heart disease.

John H. Masterson, Leighton, Ala.; University of Louisville (Ky.) Medical Department, 1889; aged 80; died, Nov. 16, 1939, in the Eliza Coffee Memorial Hospital, Florence, of shock and a fractured hip received in a fall.

Ernest Eugene Wands, Lisbon, N. D.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1906; served during the Spanish-American and World wars; aged 63; died, Nov. 19, 1939, in Tampa, Fla.

John Welton Fisher, Milwaukee; Rush Medical College, Chicago, 1877; for many years medical director of the Northwestern Mutual Life Insurance Company; aged 91; died, Nov. 25, 1939, in Detroit of pneumonia.

Morgan Dillon Baker ☉ San Jose, Calif.; University of California Medical Department, San Francisco, 1904; member of the Radiological Society of North America; aged 59; died, Nov. 13, 1939, of heart disease.

Edward Thomas Wetzel ☉ West Union, W. Va.; Baltimore Medical College, 1903; county health officer; served at various times on the board of education; aged 67; died, Nov. 4, 1939, of cerebral hemorrhage.

William C. Haltom, Jonesboro, Ark.; Memphis (Tenn.) Hospital Medical College, 1900; member of the Arkansas Medical Society; aged 70; died, Nov. 19, 1939, of mitral regurgitation and chronic nephritis.

Edwin Lincoln Winslow, Danville, Ill.; University of Wooster Medical Department, Cleveland, 1892; served during the World War; aged 74; died, Nov. 10, 1939, in a local hospital of heart disease.

William Wesley Bartine, Aberdeen, Wash.; Northwestern University Medical School, Chicago, 1898; member of the Washington State Medical Association; aged 73; died, Nov. 2, 1939, of melanotic sarcoma.

Anne R. L. Caffrey, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1911; medical inspector for the board of education; aged 67; died, Nov. 12, 1939, in the Woman's Hospital.

Lyle Bryan Durkee, Abercrombie, N. D.; Rush Medical College, Chicago, 1939; aged 25; intern at the Illinois Central Hospital, Chicago; was killed, Nov. 20, 1939, when struck by an automobile.

Henry P. Wadsworth, Chicago; Rush Medical College, Chicago, 1889; also a dentist; served during the World War; aged 73; died, Nov. 20, 1939, in Geneva, Ill., of poison, self administered.

Floyd Victor Efferding, Chicago; Washington University School of Medicine, St. Louis, 1924; served during the World War; aged 42; died, Nov. 26, 1939, in the Henrotin Hospital of meningitis.

Nicholas Anderson Wood, Denver; Marion-Sims College of Medicine, St. Louis, 1893; served during the World War; aged 72; died, Nov. 2, 1939, in St. Luke's Hospital of gastric hemorrhage.

Francis Oliver Darby, Baton Rouge, La.; Maryland Medical College, Baltimore, 1905; member of the Louisiana State Medical Society; aged 61; died, Nov. 12, 1939, of coronary occlusion.

Benjamin Thomas Smith, Newburg, Mo.; Barnes Medical College, St. Louis, 1897; member of the Missouri State Medical Association; aged 76; was killed, Nov. 20, 1939, in an automobile accident.

Sydney Allen Lowry, Kings Mountain, N. C.; Memphis (Tenn.) Hospital Medical College, 1900; aged 75; died, Nov. 6, 1939, in a hospital at Shelby of enterocolitis and chronic duodenal ulcer.

John Francis Leo Killoran, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1904; aged 60; on the staff of St. Michael's Hospital, where he died, Nov. 17, 1939.

Fillmore Young, Marion, Ohio; Starling Medical College, Columbus, 1892; member of the Ohio State Medical Association; aged 69; died, Nov. 20, 1939, of cerebral hemorrhage.

Joseph Louis Amorose, Galva, Ill.; Loyola University School of Medicine, Chicago, 1931; aged 40; was found dead, Nov. 30, 1939, of an overdose of a sleeping compound.

William Burdett Batchelder, Boston; Harvard Medical School, Boston, 1894; aged 68; died in November 1939 when a hot water heater exhausted the supply of oxygen.

Frank Henry Raab ☉ Kansas City, Mo.; University of Pennsylvania Department of Medicine, Philadelphia, 1910; aged 52; died, Nov. 15, 1939, of coronary thrombosis.

James Naismith, Lawrence, Kan.; Gross Medical College, Denver, 1898; member of the Kansas Medical Society; aged 78; died, Nov. 28, 1939, of a cerebral hemorrhage.

Thomas Reid Mellard, Asheville, N. C.; Tulane University of Louisiana School of Medicine, New Orleans, 1921; aged 42; died, Nov. 8, 1939, of pulmonary tuberculosis.

James K. Moss, Indianapolis; Medical College of Indiana, Indianapolis, 1885; at one time coroner of Clay County; aged 82; died, Oct. 24, 1939, of cardiorenal disease.

Rupert Le Roy Savage, Rocky Mount, N. C.; University of Maryland School of Medicine, Baltimore, 1897; aged 65; died, Nov. 15, 1939, of coronary thrombosis.

James Ignatius Murray ☉ Detroit; Cleveland Medical College, 1895; formerly on the staff of the Grace Hospital; aged 67; died, Nov. 20, 1939, of coronary occlusion.

Kirk Shawgo ☉ Quincy, Ill.; Rush Medical College, Chicago, 1903; on the staff of the Blessing Hospital; aged 64; died, Nov. 2, 1939, of coronary thrombosis.

Francis Chaffee Dickinson, Galesburg, Ill.; Chicago Homeopathic Medical College, 1893; aged 71; died, Nov. 19, 1939, in the St. Francis Hospital, Peoria.

Thomas J. Collins, Griffin, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1885; Confederate veteran; aged 89; died, Oct. 26, 1939, of senility.

John A. Miller, Hamilton, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1881; aged 84; died, Nov. 16, 1939, of chronic myocarditis and arteriosclerosis.

George J. Aloucos, Providence, R. I.; National University of Athens School of Medicine, Greece, 1922; aged 42; died, Nov. 18, 1939, of coronary thrombosis.

Duncan Albert Dobie, New York; Victoria University Medical Department, Coburg, Ont., Canada, 1887; aged 80; died, Oct. 23, 1939, of coronary thrombosis.

Magnus Eli Conaway, Monroe, N. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1888; aged 71; died, Nov. 4, 1939, of chronic myocarditis.

Alfred B. Penton, Oxford, Mich.; Michigan College of Medicine and Surgery, Detroit, 1896; aged 71; was killed, Nov. 13, 1939, in an automobile accident.

Ignatius Colletti-Reina, New York; Regia Università degli Studi di Palermo, Facoltà di Medicina e Chirurgia, Italy, 1893; aged 68; died, Oct. 29, 1939.

Otto C. Aichner, Erie, Pa.; Baltimore University School of Medicine, 1894; formerly a druggist; aged 65; died, Nov. 13, 1939, of coronary thrombosis.

Carroll Booker, Bogota, Ill.; Homeopathic Medical College of Missouri, St. Louis, 1884; aged 87; died, Nov. 16, 1939, in Newton of chronic nephritis.

Thomas J. Conaway, Barrackville, W. Va.; American Eclectic Medical College, Cincinnati, 1894; also a druggist; aged 76; died, Nov. 7, 1939.

Otto L. Röhlfing, St. Louis; Missouri Medical College, St. Louis, 1896; aged 64; died, Nov. 14, 1939, of chronic myocarditis and hypertension.

Eugene Brezany, St. Louis; Uniwersytet Jagiellonski Wydział Lekarski, Cracow, Austria, 1897; aged 68; died, Nov. 16, 1939, of myocarditis.

Henry B. Stephens, Memphis, Tenn. (licensed in Tennessee in 1889); aged 78; died, Nov. 3, 1939, of cerebral hemorrhage and arteriosclerosis.

William T. Nunn, Halls, Tenn.; University of Louisville (Ky.) Medical Department, 1888; bank president; aged 73; died, Nov. 3, 1939.

Thomas Boyd Ellis Beall, Columbus, Ohio; Pulte Medical College, Cincinnati, 1883; aged 81; died, Nov. 2, 1939, of coronary thrombosis.

William Campbell Weekes, St. Petersburg, Fla.; University of the City of New York Medical Department, 1892; died, Nov. 18, 1939.

John Joseph Condrick, Brockton, Mass.; University of Vermont College of Medicine, Burlington, 1911; aged 53; died, Nov. 10, 1939.

William E. Taylor, Mammoth, W. Va.; University of Louisville (Ky.) Medical Department, 1913; aged 57; died, Oct. 30, 1939.

D. Richard Waddle, Greenville, Texas; University of Tennessee Medical Department, Nashville, 1896; aged 69; died, Nov. 2, 1939.

Peter Weimar Fischer, Denver; Colorado School of Medicine, Boulder, 1891; aged 80; died, Nov. 19, 1939, of coronary thrombosis.

Ellis W. Hall, Attica, Ohio; Starling Medical College, Columbus, 1885; aged 75; died, Nov. 19, 1939, of myocarditis and pneumonia.

James Melvin Park, Hamilton, Ont., Canada; University of Toronto Faculty of Medicine, 1903; aged 64; died, Nov. 12, 1939.

Micajah Haynes, Vinita, Okla.; Atlanta Medical College, 1877; aged 88; died, Oct. 29, 1939, of cerebral arteriosclerosis.

Tilton Vance Moore, Delco, N. C.; Baltimore Medical College, 1901; aged 62; died, Nov. 14, 1939, of coronary thrombosis.

Edward Hugo Shields, St. Louis; Miami Medical College, Cincinnati, 1892; aged 73; died, Nov. 11, 1939, of heart disease.

Bureau of Investigation

ANOTHER FRAUDULENT "ELECTRIC BELT" Lorenz Device, with "Electric" Suspensory, Debarred from the Mails

Another "electric belt," long promoted for the cure of weakness in men, has been debarred from the mails through the issuance of a Post Office fraud order against the Lorenz Truss and Electric Works, The Electra Vita Company and D. Lorenz, all of Chicago.

For many years the Lorenz concern advertised its device as the "Famous Dr. Lorenz Electro Body Battery." In later years, what seems to have been about the same thing with a suspensory attachment added has been sold as the "Electric Body Battery and Suspensory." Though a form letter sent out in 1935 bore a picture of a man wearing only this device

gives strength and energy to every nerve, muscle and bone; it makes one feel young and ambitious . . .

As for the Lorenz battery itself, it was

"Guaranteed to give 300% greater service and . . . 400% easier applied than the old style vinegar, so-called health-belts . . . It sends a stream of vital life into your nerves, organs and blood during the time you are asleep. For the treatment of rheumatism, weak back, nervousness, stomach, liver and kidney disorders, varicocele and losses it is incomparable . . ."

What more, indeed, could the suffering ask? Nor was it only to "weak men" that Lorenz made his appeal, for one of his booklets after extolling the belt's alleged value to that sex introduces a section under "Female Complaints" with comment beginning:

"The wonderful influence of Electricity in the treatment and cure of all diseases peculiar to woman . . . it is a cure for the most complicated troubles which no other remedy can reach."

As with many other mail-order schemes, if one did not readily swallow the Lorenz bait he was offered the belt at a lower price in due time, and permitted to purchase the "No. 12 Grade" (\$27.50) for \$22.50 and the "No. 10 Grade" (\$18.50) for \$16.50. Further, "Dr." Lorenz exhorted the prospective sucker:

"If you cannot decide which grade may be most suitable for your condition, or if you wish any information concerning your ailment or my appliances, write me and I will give you my expert advice by return mail."

And of course there was the usual quack assurance, "All letters treated strictly confidential."

By 1935 business apparently had become so poor that a still more drastic price reduction had to be made, for a circular issued in that year offered these terms: "Regular Retail Price \$25.00—Our Factory to Consumer Price \$6.00."

The Lorenz concern flourished for at least thirty-five years before any government agency took action against it. Finally in December 1937 the Federal Trade Commission reported that it had prevailed on M. Hatzenbuehler, trading as the Lorenz Truss and Electric Works, Chicago, to cease and desist from falsely representing that his appliance preserves health or improves strength, or is valuable in the treatment of run-down conditions, weak nerves, rheumatism or poor circulation. Hatzenbuehler also promised to discontinue using the word "Doctor" as part of the trade name or in any other manner implying that a physician was or had been active in developing it.

After the business had been going for about thirty-six years the Post Office Department found out about it. On Jan. 31, 1939, that department called on the Lorenz Truss and Electric Works, D. Lorenz and the Electra Vita Company to show cause why a fraud order should not be issued against them. On March 14, 1939, Michael Hatzenbuehler, still operating the same old business, entered a denial of the charges of fraud but neither he nor any other representative of the enterprise put in an appearance on the date set for the hearing. Thereupon the Hon. Vincent M. Miles, Solicitor for the Post Office Department, recommended to the Postmaster General that the fraud order be issued, debarring the outfit from the mails.

Judge Miles's memorandum on the case alleged that the Lorenz group was receiving money through the mails for an "Electric Body Battery and Suspensory" by representing it as an effective and successful treatment for impotency, tumor, syphilis, systemic poisoning, diseases of the spinal cord and the brain, goiter, obesity, colitis, high blood pressure, intestinal obstruction, acute gonorrhea, arthritis, carcinoma, cystitis, fistula, fissure, hemorrhoids, prostatic disorders, stricture of the urethra, uterine complaints, paralysis and some other conditions. A typical advertisement was quoted:

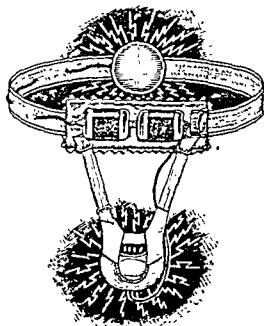
"MEN SEE FOR YOURSELF"

"If you are a sufferer of weakness, nervousness, lost vim or vigor, investigate Dr. Lorenz Electric Suspensory. It preserves health, improves strength. No medicine to take or Doctor Bills to pay. Small cost, quick results. Circular free. Lorenz, 5842 S. Tripp Ave., Dept. 9, Chicago, Ill.—9-7."

The memorandum cited from other Lorenz advertising matter statements on the therapeutic action of electricity that apparently had been "lifted" from medical literature and that indirectly quoted a "Dr. Martin," a "Dr. Massey" and a "Dr. Snow," who were not identified by initials.

Our latest improved Body Battery

with electric suspensory and triple compound metallic units,
Double Strength.



Progress - Experience

Thirty-three years ago the L. T. & E. W. started to make body batteries and kindred appliances.

Our constant aim in all these years has been to furnish the people with the best and strongest most convenient and most serviceable body battery. till we finally decided upon this body battery with electric suspensory and triple compound metallic units.

Co-operation

helps assure low prices.

If not interested now, hand this circular to a friend, but keep our name and address, you may wish to communicate with us at a later day. Upon request we will mail you another circular.

Regular Retail Price \$25.00

Our Factory to Consumer Price \$6.00



The Inventor of the Appliances.

The above illustrates our latest improved electro galvanic body battery with electric suspensory, the very latest "Straight to the point" invention, for home treatment. It saves time going to a specialist and money. For weak, run-down conditions, weak nerves or back, nervousness, poor circulation of the blood, rheumatism, low vitality, vim or vigor, tired feeling it has no equal. Constructed to go directly to the spot. It is easy to manipulate, always handy, always charged and ready for use, and while the current is powerful in its work, it is mild and gentle when applied to the body. There is an entire absence of odor.

Body Batteries and Kindred Appliances to the Public and Trade since 1902

Some of the Lorenz advertising (reduced) received in 1935.

and designated "Trade Mark since 1902," the company's early letterheads bore, under the words "Trade Mark," a picture of a long haired, heavily bearded individual with flowing tie, designated "D. Lorenz." This may have been the same person listed nearby as "Dr. Lorenz, Manager," and included among the names of the three "Founders." Neither the medical directories of that period nor the current ones list a D. Lorenz of Chicago as a doctor of medicine.

Certainly the Lorenz outfit would not let the public confuse its device with the ordinary "electric belt" that was widely advertised some twenty-five years ago. In its literature around that time the concern claimed: "The Dr. Lorenz Electro Body Batteries are the only ones in the market which have the special feature of working without constantly being charged with vinegar or acids or have the patented anti-short rheostat." (At that, it would be nice to be able to turn the thing off if one suddenly smelled scorched skin or burning clothes.)

Typical of the advertising buncombe of that period were other Lorenz blurbs:

"Electricity puts new life, strength, vim, vigor and courage in the entire system; it vitalizes the blood, increases the circulation,

Further, the memorandum showed that the Lorenz device was a suspensory-like appliance with two batteries and electrodes attached thereto. One each of these was fastened to the belt for application at the center of the back and the others were attached to the suspensory. With the appliance came some literature, "General Information and Directions" on the use of it and this also contained advice on bedroom ventilation, diet, bathing, exercise, sexual life and even hair cutting.

Judge Miles's summary of the case is worth quoting in full:

Careful tests of the Lorenz appliance in the Bureau of Standards, United States Department of Commerce, show that when applied to the body as directed the maximum current passing through the tissues as a result thereof is .006 of an ampere of galvanic electricity. According to the evidence before me, reflective expert knowledge and opinion in the fields of medical and electro-thermal matters shows that weak galvanic currents of this character were extensively tested in past generations in the treatment of divers ailments and affections but their use has been long since abandoned as futile and worthless. While according to the evidence use of high frequency currents which can be produced only by heavy and expensive generating equipment raise the temperature of the tissues and are thus of limited value in the treatment of a few chronic disease processes, the diseases and ailments claimed to be overcome by the promoters of this enterprise will not and cannot be conquered even by the use of such vastly superior electrical apparatus. According to the expert evidence, impotency, tumor, syphilis, goiter, obesity and the other diseases and conditions alleged to be amenable to successful treatment by use of the Lorenz belt are, moreover, so varied in their origin and nature as to necessitate not only careful diagnosis but a particularized mode of treatment adapted both to the special affection involved and to the individual sufferer, and attempts to treat diseases and conditions such as syphilis and tumors with the Lorenz appliance are worse than useless, for the reason that the delay caused thereby may result in progress of the affection to a point at which proper treatment has become futile.

"In his answer to the charges Mr. Hazenbuehler in effect denies having offered his device for sale through the mails for diseases and conditions hereinbefore named. However, while divers attempted disclaimers are set forth in the literature, they are obviously included therein solely for use in the event of action against the promoters of the enterprise under the postal fraud statutes and the controlling effect of the literature is to the effect that the device constitutes an effective and successful treatment for the diseases and ailments to which reference is made therein.

"The evidence shows that this is a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and I so find.

"I therefore recommend that a fraud order be issued against Lorenz Truss and Electric Works, D. Lorenz, Lorenz, Electra Vita Company, Not Inc., Electra Vita Company, and their officers and agents as such, at Chicago, Illinois."

Following up this recommendation, finally after thirty-six years the mails were closed to this long-time fakery on March 24, 1939. *Though the mills of God (and government agencies) grind slowly, yet they grind exceeding small.*

VITAL PRODUCTS COMPANY FRAUD

Products Found to be not so "Vital"

The United States mails have been closed to one W. P. Marmon, trading as the Vital Products Company at Hoboken, N. J., in a memorandum declaring it a fraudulent mail-order scheme.

Marmon advertised in various publications circulating mainly in rural districts:

MEN

100 Modern items

"PERSONAL NEEDS"

Valuable catalog FREE

WOMEN

VITAL PRODUCTS—A Hoboken, N. J.

Those who answered received a large illustrated printed circular offering for sale a number of alleged medicinal products and certain devices. Government chemists reported the former to consist of:

Relieve Tablets (for reducing): In each tablet, $\frac{1}{4}$ grain of phenolphthalein, $\frac{1}{2}$ grain of thyroid, and small amounts of plant extractives including apocynin.

Tobac-Quit (for tobacco habit): Essentially 3 per cent of silver nitrate, with water and oil of peppermint.

Femi-Cones (vaginal suppositories): Oxyquinoline, boric acid and benzoic acid, in cacao butter base.

Femoline Vaginal Jelly (Femolient): Oxyquinoline sulfate, lactic acid and boric acid, in a glycerite of starch base.

San Souci Capsules (for delayed menstruation): Essentially apiol, ergotin, a small amount of aloin and a trace of oil of savin.

San Souci Tablets (for suppressed or scanty menstruation): In each tablet, 1 grain of ferrous sulfate, together with aloe and cotton root bark.

Vigor Tablets (El Spano): In each tablet, essentially $\frac{2}{100}$ grain each of damiana, strychnine, anhydrous ferric oxide, $\frac{1}{2}$ grain of zinc phosphide and $\frac{3}{100}$ grain of talc.

Revita Tablets ("blood tonic, stimulant and aphrodisiac"): In each tablet, 2.2 grains of Bland's mass, $\frac{1}{2}$ grain of manganese dioxide, $\frac{1}{2}$ grain of zinc phosphide, and an unreported amount of strychnine and traces of arsenic and aloin.

Expert medical evidence was introduced by the government to show that the representations made for these nostrums as remedies for various disorders were false and fraudulent and their promoter, W. P. Marmon, was ordered to show cause why they should not be excluded from the mails as such. Marmon, by various excuses, obtained several delays in the case, claiming, for example, that the misrepresentations had been discontinued. As this was found to be untrue, however, the Solicitor recommended to the Postmaster General that a fraud order be issued, debarring Marmon's business from further use of the mails, and this was done on April 19, 1939.

Before the case was closed, Marmon appeared before the Post Office Officials and admitted that he did not believe he would be able to disprove the charges against him. This might be taken to mean that he was willing to abandon the promotion of these nostrums through the mails. He did, however, request permission to continue using the name Vital Products Company in connection with the sale through the mails of "rubber goods" designated "for the prevention of disease." He was told that compliance with his request was impracticable and that unless he agreed to discontinue the enterprise it would be necessary for the Post Office Department to proceed to consider the issuance of this fraud order. As Marmon did not agree to this suggestion, the fraud order was issued against the Vital Products Company and its officers and agents as such.

A KANSAS TUBERCULOSIS CURE FRAUD

Post Office Department Debars C. E. Wray Scheme from the Mails

Once mail-order cures for tuberculosis were so common that the Bureau of Investigation issued a special pamphlet "Consumption Cures." Such promotions are exceedingly rare now; an occasional one does still exist.

From Salina, Kan., one C. E. Wray sold through the mails a "Cure" for tuberculosis known as "Wray's Tubercular Compound." It consisted of four products called "T. B. or Stomach Compound," "Hot Shot Liniment," "Liver Tablets" and "Kidney Tablets."

As a "come-on" Wray sent prospective customers a booklet which read in part as follows:

"The Purpose of Wray's Tubercular Compound is to destroy the T. B. germ and to heal and build new tissue in these contour or lesions, by working through the blood stream. After using this Compound for several months, the blood stream will be in condition to heal the lesions and replace the tissues torn down by the tubercular germ. After this resistance has been built up the Tubercular germ has been destroyed."

There followed, of course, the inevitable testimonials from persons who believed they or their relatives had been cured by Wray's treatment.

Among the evidence presented by the Post Office Department was a report from government chemists showing the composition of various Wray nostrums to be as follows:

T. B. or Stomach Compound: Fluid extract of beef, horehound, blood-root (seeds), black root, gentian root, yellow dock, "scippia" (sepia—cuttlefish bone?), catnip, bayberry, "lippe—Mexican root" (lippia?), cascara bark, burdock root, niggerhead root (echinacea?), peppermint and sodium benzoate.

Liver Tablets: Essentially aloin, cascara, podophyllin, ginger, strychnine and alkaloids of belladonna.

Kidney Tablets: In each, 1 grain of saltpeter, and plant extractives including aloe, licorice, juniper and nux vomica.

Hot Shot Liniment: Essentially about 15 per cent of chloroform, about 1.2 Gm. of camphor per hundred cubic centimeters, with alcohol, water, some unidentified syrupy material and a small amount of soap.

The directions for applying the liniment are quoted below in the original spelling and punctuation:

"taking a small peace of cotton, soak the cotton with it then hold it on the knee and down the lage [leg?] about three times then put it on the heel of the foot then on the arch then under the toes. Then hold it back of the neck and just below of ear. Then hold on each lobe of the lungs both frunt and back. hold it on those parts till it burns then move to other places do this ever evening."

Hon. Vincent M. Miles, Solicitor for the Post Office Department, in his memorandum to the Postmaster General, recommending the issuance of a fraud order against the scheme, pointed out that there was nothing new about the drugs contained in these preparations and that they are without thera-

peutic effect for the purposes for which they are sold. The evidence showed that they would not and could not destroy the tubercle bacilli in the manner described.

In answer to the charges Wray claimed that, while certain circular material had been printed in his name in the past for use by an individual now no longer in his employ, he (Wray) did not use such literature himself in promoting the sale of his treatment. He claimed further that any statements made in his name that "in even the most discouraging cases" the treatment would "destroy the tubercle bacilli in the body" had been made by others than himself and without his knowledge or consent. The evidence, however, was said to show that the circulars quoted were regularly furnished by Wray to inquirers about his treatment and he so admitted to the Post Office inspector. Although Wray presented a number of statements from persons claiming to have been benefited by his nostrums, in his answer to the charges he declared that he himself did not even claim that his compound would cure tuberculosis.

The Solicitor's memorandum also brought out that on March 11, 1939, the District Court of Salina County, Kan., issued a permanent injunction restraining Wray from the unlawful practice of medicine until such time as he qualifies himself therefor in the manner provided by law.

The Solicitor found from the evidence that Wray's business was a scheme for obtaining money through the mails by means of false and fraudulent pretenses, and a fraud order was accordingly issued against it on April 6, 1939.

Correspondence

RABIES IN ALABAMA

To the Editor:—The communication of Drs. J. L. Pomeroy and H. O. Swartout November 18 concerning our report (Rabies in Birmingham, Alabama, *THE JOURNAL*, July 29, 1939, p. 390) is gratifying for the interest it appears to have created.

Drs. Pomeroy and Swartout criticize the publication of our conclusions because "they have been seized on by enemies of public health work" to cast discredit on rabies control measures. Fear of criticism from cranks or quacks among the public or from well grounded and respected members of the profession never offers valid excuse for excluding from the medical press such facts and data as are pertinent to changing views in the practice of medicine and public health. What such critics fail to see and what Drs. Pomeroy and Swartout apparently do not realize is that any reflection on the efficacy of antirabies vaccine renders the control of the disease in dogs even more important.

Exception was taken to our fourth paragraph, which was intended to indicate the extremes of attitude as regards treatment. In the majority of cases moderate persuasion on the part of the physician is sufficient to influence the unbitten patient against taking treatment, but too often the patient is advised that vaccine should be administered to any person "contaminated in any way" by the saliva of a rabid animal. Our case histories bear this out. Patients in "extreme mental anguish" and persons with rabies psychosis are never refused treatment. Such mental states were not included among the indications for administering vaccine, however, because (in the absence of a bite) the psychosis could be treated just as effectively with sterile saline solution or diluted sterile milk. Neither produces "treatment psychosis" as far as we know.

Despite the fact that we pointedly stated that the incidence of rabies in dogs as presented in our report "represented incompleteness of data, not true incidence," Drs. Pomeroy and Swartout boldly declare on the basis of our data that "one obvious conclusion regarding the effectiveness of canine vaccination was not drawn. If the incidence of rabies among all dogs belonging to white owners was 1.5 per cent, while the incidence among vaccinated dogs (40 per cent of the whole

group) belonging to white owners was 0.5 per cent, this would indicate that about 75 per cent of vaccinated dogs were protected by the treatment." We would have agreed with this statement in 1935 when we published similar data to show the effect of such vaccination but we have since learned that the number of animals suspected of being rabid and found positive by the laboratory is by no means an indication of total prevalence. In a survey completed in Birmingham last July, Denison and Leach (*The Incidence of Rabies in Dogs and Rats as Determined by Survey*, read before the Laboratory Section, American Public Health Association, Pittsburgh, Oct. 18, 1939) examined apparently normal dogs killed at the pound and dead dogs removed from the streets by the garbage department. The number of such dogs found rabid was sufficiently high to indicate that the total incidence is from three to four times greater than routine laboratory studies indicate. And because the vast majority of rabid dogs are never under suspicion it was concluded that any field study undertaken to determine the efficacy of prophylactic canine vaccination is of questionable value unless an examination for rabies is extended to include all dogs that die from any cause. In our report we did not refer to this survey because it had not been completed, but we did emphasize repeatedly that our figures on incidence of rabies among animals expressed only a fraction of the total prevalence.

Our declaration that "the persistence with which fatalities continue to be equally distributed among the treated and untreated" is not a conclusion, as stated by Drs. Pomeroy and Swartout, but a statement of fact (Alabama Vital Statistics), and the actual numbers (forty-eight deaths, twenty-three treated) were given in the preceding sentence of our report. "Affords ground for wide speculation" was the conclusion, or more properly the inference, which completed our sentence. In view of the fact that more than two thirds of the rabid animals in Birmingham are entirely unrecognized, it will probably never be possible even to approximate the total number of persons (white or Negro) who are bitten but who do not take treatment. Perhaps the circumstances are different in Los Angeles. We do believe it significant, in a disease in which infection appears so rarely following direct exposure, that so large a proportion of the few deaths that do occur are among the treated.

The main theme of our report to which Drs. Pomeroy and Swartout take exception is expressed as follows: "In the experiences cited there is little relation between mortality from rabies and the administration of antirabies vaccine, for (1) among the highly exposed untreated (Negro) population fatalities are no greater than among the highly exposed treated (white) population, and (2) such rare fatalities as do occur are equally distributed among the treated and the untreated."

Both statements 1 and 2 are factual as regards the distribution of fatalities. In Alabama from 1922 to 1939 there were forty-eight deaths, and among these twenty-three were of treated patients and fourteen of Negroes. In Birmingham from 1929 to 1939 there were three deaths and among these two were of treated patients and two were of Negroes. However, the objection is raised that the exposure rates for the two races are different and the inference is made that the white family probably keeps the dog at home and is bitten while caring for it during its illness, while the Negro permits his sick dog to roam about and bite some one else. On the contrary, 58 per cent of dogs owned by white people which we find rabid come to us from the pound, where they have been quarantined at the owner's request, or from a veterinary hospital where they have been sent for observation and care. Negroes ignore the disease and only seldom follow this procedure.

Factual data which point to equal exposure rates for the two races are as follows: 1. By actual survey it was determined that Negroes have practically as many dogs per family as white

persons (0.28 as compared to 0.32). 2. By the same survey Negroes were found to be more inadequately housed and living in more crowded conditions poorly separated from one another and from their dogs. 3. The segregated Negro areas are so scattered throughout Birmingham that loose dogs have free range to both populations. 4. The survey on the prevalence of rabies in dogs and rats, previously referred to, distinctly shows that the great majority of dead dogs removed by the garbage department to the incinerator and found rabid by us on laboratory examination were from areas that are predominantly Negro in population. This is further confirmation of our statement that Negroes submit few animals for laboratory examination because of their failure to suspect or recognize the disease.

Drs. Pomeroy and Swartout wonder why we, with our expressed opinions, give antirabies vaccine at all and appear surprised that we advocate a rabies control program. Our opinion of the vaccine was explicitly stated to the effect that "It is not inferred from this that vaccine is without value but rather that its value has been greatly exaggerated." This, together with the fact that nothing else can be done for the patient except cauterization of the wound, constitutes our reason for using the vaccine. And if these procedures are of limited value, which they most certainly are, then a dog control program seems fundamentally important to relieve a ridiculous situation.

We regret that our report may have been used to reflect criticism on any public health official or program, though we still feel that its publication was fully warranted for the information it contains. Certainly it does not minimize the necessity of a dog control program as basic and fundamental to the control of the disease and to the elimination of a big nuisance problem.

GEORGE A. DENISON, M.D.

J. D. DOWLING, M.D.

Birmingham, Ala.

Director of Laboratories and Health

Officer, Jefferson County Board of

Health, respectively.

A PHILOLOGIC ADVENTURE IN PHARMACOLOGY

To the Editor:—The necessity for careful verification of foreign abstracts of published scientific research has recently been brought home to me forcibly. In *Chemical Abstracts* for June 20, 1939, page 752, appeared the following abstract:

Poisoning by cobra venom. Symmetrical necrosis of the renal cortex. Uremia. A. Penna de Azevedo and J. de Castro Teixeira. *Mem. inst. Oswaldo Cruz* 33: 23-37 (1938).—Pathol. and anatomical changes in a fatal case of snake bite Bothrops jararaca) are described. . . .

This article aroused my curiosity because of a reference to striking changes produced in the kidneys in the particular case of snake bite cited. At that time I had conducted an extensive research concerning the effect of cobra venom solutions on kidney and liver function of laboratory animals and I had found, both by making physiologic function tests and by histologic examination of kidney tissue in some of the animals killed for this purpose, that administration of large doses of the drug for periods of several months did not produce appreciable changes in the kidneys (*Proc. Soc. Exper. Biol. & Med.* 41:418 [June] 1939).

The abstract was furthermore perplexing, owing to the fact that cobras are not found in South American countries although these countries do harbor other dangerous reptiles. Moreover, the abstract in question contained two apparently contradictory assertions. The title read "Poisoning by Cobra Venom" but the text described pathologic changes produced by the bite of Bothrops jararaca.

In order to clear up the puzzle I requested the editor to lend me the original publication. A perusal of the article in the original Portuguese revealed that, while the title did speak of

poisoning by cobra venom, the text referred to the bite of Bothrops jararaca. I could conceive of but one explanation for the apparent contradiction of terms, which was that the word cobra, as used in the Portuguese article, implied something other than that which it signifies to British, American and French investigators. Further inquiry confirmed my surmise. A search of Portuguese dictionaries, conversation with a South American consular official and especially a discussion of the whole subject with an eminent authority on romance philology, Prof. Leo Spitzer, of Johns Hopkins University, revealed that the word cobra in Portuguese is a generic term applied to all kinds of snakes. It is derived from the Latin coluber, a general term for snakes, and Portuguese writers speak of a cobra di capello (which is the Indian cobra), a rattlesnake cobra, a Bothrops cobra and other kinds of cobras or snakes. Curiously enough the Spanish word for snake is not cobra but culebra (cp. *culebra*, "cut"), which cannot be confused with English "cobra" as the Portuguese term is. This philologic explanation of the word cobra made the abstract quite clear. The venom of the Indian cobra consists largely of neurotoxic constituents or substances having a specific affinity for nervous elements. The venom of the South American vipers, as well as those of the North American rattlesnakes, on the other hand, contain much larger quantities of blood-destroying proteolytic and cytotoxic ingredients, which are very toxic for such parenchymatous organs as the kidneys; and the bites of such reptiles may well produce extensive kidney lesions.

More recently an even more striking confusion of terms and misinterpretation of the word cobra was discovered by me in another reference. In the *Quarterly Cumulative Index Medicus* there was a reference to an article by two foreign investigators which read as follows:

Correa da Costa, C., and Duck, H., O veneno de cobra na dysmenorrhea, *Rev. de gynec. e d'obst.* 2: 10-15, July '38.

This reference on superficial examination was taken to refer to treatment of dysmenorrhea with cobra venom. Indeed the article was listed thus in the *Index* under the main caption of Dysmenorrhea and the subtopic Therapy, "—cobra venom (C. Correa da Costa and H. Duck) *Rev. de gynec. e d'obst.* 2: 10-15, July, '38."

Being interested in therapeutic applications of cobra venom, I secured a copy of the original paper from the publishers and verified the title O veneno de cobra na dysmenorrhéa. On reading over the text, describing treatment of a series of cases of severe dysmenorrhea with solution of snake venom, I found to my surprise that in every case the venom administered was not that of the true or Indian cobra but crotalin, a preparation made from the venom of the South American rattlesnake. Here again the term cobra as used in the title of the paper was merely the generic name for snake and did not indicate the species employed, which, however, was fully described in the text.

An amusing feature of the latter report was the circumstance that the authors, while discussing the *modus operandi* of snake venom in relieving dysmenorrhea, quoted extensively from my original paper dealing with the pharmacodynamics of the Indian cobra, or Naia tripudians (*Proc. Nat. Acad. Sc.* 22:61, 1936). Thus it appears that my South American confrères fell into the same error that trapped the American abstracters of the two Portuguese papers described here and attributed to me work which I had never done.

I have described this philologic adventure in order to impress investigators in the sciences, and particularly in the field of medicine, with the importance of maintaining a critical attitude when reading abstracts of foreign literature. Caveat lector: "Let the reader"—of scientific literature—"be ever on his guard."

DAVID I. MACHT, M.D., Baltimore.

QUERIES AND MINOR NOTES Queries and Minor Notes

JOUR. A. M. A.
JAN. 6, 1940

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CALCIUM AND TUBERCULOSIS

To the Editor:—Could you possibly inform me of the therapeutic use of calcium, intravenously and orally, in the treatment of tuberculous lesions by calcium therapy? it possible to aid in calcifying tuberculous lesions by calcium therapy?

John R. Gateley, M.D., Westfield, Mass.

ANSWER.—Calcium has long been used in the treatment of tuberculosis probably largely because it was early found that its salts are sometimes deposited in tuberculous lesions. It seemed logical that if calcium was administered in large doses it would be available in sufficient quantity to play an active part in the healing of tuberculous lesions. An important fact is that the deposition of lime salts occurs with great frequency in the secondary or reinfected type of lesions and, after all, it is the latter which cause nearly all the significant destruction in the animal and human body. Calcium salts are deposited only in caseous material and there is evidence to lead to the belief that the tuberculous lesion is quiescent before the deposition of calcium occurs. Another significant fact is that the deposition of calcium does not progress in the dead, caseous material where calcium is deposited but in the surrounding living tissue. Thus the deposition of calcium apparently has little effect on the control of tuberculous lesions. That which casts shadows on the x-ray film or that seen at postmortem examination only indicates points where destruction has occurred. Nevertheless there is extant the belief that the administration of calcium is indicated in tuberculosis. Unfortunately, despite the large number of clinical reports of favorable results from calcium administration there seems to have been no extensive clinical study sufficiently controlled to be of scientific value. On the other hand, clinical observations have been made which were negative but, unfortunately, they were not well controlled. Numerous attempts have been made to increase the calcium content of the blood. For example, Denis and Minot gave normal persons 6 Gm. of calcium lactate by mouth for from six to ten days but found no increase of the blood content. In cases of tetany with a fall in the serum calcium, from 10 to 11 mg. per hundred cubic centimeters to an average of 5.6 mg., Howland and Marriott administered calcium by mouth with the result that the blood calcium rose to normal in some cases but in others it could not be raised above 7.5 to 9 mg. were able to increase the calcium by feeding it but could never bring it above the usual normal amount. It appears that the normal amount of calcium found in the blood of both man and animals represents about all that the blood can carry. Heubner and Rona administered subcutaneously large doses of calcium chloride to cats and produced a rise in the blood calcium of about 40 per cent within ninety minutes, but within five to six hours the calcium content of the blood had returned to normal. When calcium in large quantity is introduced intravenously, the blood content may be raised to two or three times the normal but within two hours it has returned to the normal amount. Mayer and Wells studied the tissues of guinea pigs that were fed the usual laboratory diet without addition of calcium and found marked individual variations in the amount of calcium in the same organ of different animals and also a variation in the amount of calcium in different organs of the same animal; but when averages were obtained the proportion of calcium in each of the tissues studied was found to be nearly the same. These authors then studied the tissues of another group of guinea pigs on the same diet except that calcium was fed, with the result that usually they found that these animals did not have more calcium in their tissues than those which had not been fed calcium. In another group of guinea pigs which were tuberculous but were given the same diet to which calcium was added it was found that calcium in the nontuberculous organs was not increased but was definitely increased in those organs which were tuberculous. This was true also in another group of

tuberculous animals which did not have calcium added to the diet. Thus it did not appear that the administration of calcium results in greater deposition in tuberculous lesions than occurs in animals on an ordinary diet. It has been pointed out that tuberculous patients usually take milk as a part of their diet and that its calcium content together with that of other foods is adequate.

Halvorson studied the calcium content of the blood of persons suffering from pulmonary tuberculosis. Among those with minimal disease who were improving, the calcium in the serum was found to be normal and quite constant. These patients were on a high milk diet but in no case was the calcium content of the blood found above normal. In advanced cases there was some variation in the calcium content but on the whole there was no marked deviation from the normal.

One frequently meets the statement that dental caries occurs among persons with clinical tuberculosis because of the demand for calcium in healing the tuberculous lesions; in fact, it is often stated that this demand is met by removal of calcium from the teeth. However, Kiehle was unable to obtain any evidence whatever to support this belief.

Parathyroid and calcium have been employed in the treatment of tuberculosis because it was found that parathyroid extract mobilizes calcium in serum. Calcium and cod liver oil have been used because it was found that calcium metabolism is affected in rickets by the fat soluble vitamin of the oil. However, in patients so treated there has been no definite evidence of increase in the deposition of calcium in the tuberculous lesions.

Thus, good investigations do not support the view that demineralization and especially a loss of calcium from the various tissues of the body accompanies tuberculosis. Moreover, there is no evidence that the administration of calcium to animals or man with a normal blood calcium content increases the content of calcium in the blood or the tissues except for a brief period. Therefore, no matter how much calcium is administered it is not taken up by the blood beyond the usual normal limits; thus there is no more in the blood stream to be deposited in the tuberculous lesions than when the ordinary daily calcium requirement is provided through the food.

In the control of symptoms of tuberculosis of the intestine, however, calcium chloride may be of considerable value. For this purpose it may be administered intravenously in doses of 5 cc. of a 5 per cent solution once or twice each week.

LATE SYPHILIS AND MARRIAGE

To the Editor:—A man had a painless swelling of the right testicle one year ago. His physician, a competent urologist, made a diagnosis of syphilis on the basis of repeated positive serologic reactions. Antisyphilitic treatment was started and a short time afterward the mass disappeared. Since that time the patient has been receiving continuous treatment. He gives no history of a chancre or any secondary eruptions. However, he thinks the disease might have been contracted about six years ago. I do not know what present serologic tests of his blood indicate. He would like to marry, so he asked his physician for advice concerning this matter. The physician advised him to have a bilateral vasectomy before marrying. The patient would like to have children and is therefore quite concerned over this matter. I would much appreciate your opinion on this case.

M.D., Illinois.

ANSWER.—Symptomless infections with syphilis are far from uncommon. This is particularly true in women, but the same type of situation is also found in men and it is possible that this man may have had such an infection. Evidently the process in the testicle was a gumma, and these lesions are usually painless. Much depends on how much treatment the patient has had and on his present condition.

In a case of late syphilis of this sort it is felt that the person should receive continuous treatment with alternating courses of arsenic and bismuth compounds until he has received a total of at least three or four ten injection courses of an arsenical, for example neoarsphenamine or mapharsen, and of a bismuth compound, perhaps an oil suspension of bismuth subsalicylate. As a rule treatment should be kept up until his serologic reactions have been negative for at least one year. However, at the end of the suggested amount of treatment, if his physical examination and his lumbar puncture give negative results and if careful x-ray examination of the cardiovascular system shows no evidence of syphilitic involvement, the continuous therapy may be changed and thereafter the patient may be given two further courses of bismuth subsalicylate intramuscularly a year for two years.

If this is the case there is no apparent reason why it would not be all right for this man to marry, particularly since his disease was probably six years old at the time he consulted the

physician. There are no obvious indications for a bilateral vasectomy. The older a syphilitic infection, the more difficult is its transmission, and this applies particularly to men. If such a person has had his syphilis for six years, if he has had sufficient treatment, one need have little fear about the transmission of the disease to his wife.

STOMATITIS—DENTAL REPAIR OF PULPLESS TOOTH

To the Editor:—1. A patient recently suffered from a condition diagnosed as "acute catarrhal stomatitis," characterized by edema and ulceration of the buccal mucous membrane with tenderness, more severe on one side and most severe in the region of the third molars on both sides. Could this condition have come from the leakage of beechwood creosote from an upper molar on the more affected side which was receiving dental treatment? What would be the cause of stomatitis with large painful ulcers and its treatment? 2. In the treatment of an upper molar which requires the removal of the contents of the pulp chamber, is it more advisable to attempt treatment that will permit the tooth to remain in the mouth or to remove the tooth and place a "bridge" in its stead?
M.D., Connecticut.

ANSWER.—1 (a) It seems unlikely that the condition described would result from leakage of beechwood creosote from the upper molar under treatment. Beechwood creosote would produce a local inflammation of the soft tissues around the point where the leakage occurred. Presence of inflammation which is most severe in the region of the third molars on both sides would suggest that the cause might be infectious in nature and not due to local action of the drug.

(b) The most common type of stomatitis with large painful ulcers is probably "aphthous stomatitis" or "canker sores." The etiology of this condition is unknown; treatment consists of cauterizing the ulcers with 10 to 40 per cent silver nitrate. Vincent's infection often presents small ulcers on the gingivae which are quite painful; sometimes Vincent's infection is complicated by aphthous stomatitis. It is impossible to give a diagnosis from the scanty information furnished, for ulcers in the mouth may be due to several widely different conditions. Further information may be found in:

Prinz, Hermann, and Greenbaum, S. S.: Diseases of the Mouth and Their Treatment, ed. 2, Philadelphia, Lea & Febiger, 1939, particularly pages 190 to 235.

2. It is generally conceded by dental authorities that it is possible to remove the pulp, fill the root canals and thus safely retain for years a badly broken down tooth. Of course, such treatment should be attempted only in carefully selected cases considering the patient's age, general health, presence of infection around the apex, anatomy of the root canals, value of the tooth to the patient, and similar factors. It is impossible to say whether or not the particular tooth in question should be treated or extracted. Many upper molars are treated with good results. Further information is given by:

Blayney, J. R.: Tissue Reactions in Apical Region to Known Types of Treatment, *J. Dent. Res.* 9: 221, 1929; 10: 425, 1930.
Coolidge, E. G.: Pathology and Treatment of the Pulp and Preparation of Root Canal for Filling, *J. Am. Dent. A.* 19: 1964, 1932.

PROLONGED SECOND STAGE LABOR

To the Editor:—If the fetal heart tones are good and the mother in good condition, is intervention indicated even after four hours of protracted second stage labor? May it not require longer for an oversized head to mold? What are the dangers of prolonged second stages?

I. I. Rosen, M.D., L'Anse, Mich.

ANSWER.—The normal duration of the second stage of labor will vary considerably in different individuals. It will depend on the adequacy of the pelvis, the size of the baby, the effectiveness of the forces of labor and the resistance offered by the soft parts. A small pelvis, particularly a decreased size of the outlet, will prolong the second stage of labor. The baby with a large head will require a longer time to pass through the birth canal than the small baby. Poor pains slow progress considerably. Soft structures that are rigid and inelastic may offer considerable resistance to the presenting part.

The advisability of intervention will likewise depend on several factors, such as the level of the head in the birth canal, the position of the head, evidences of disproportion between the presenting part and the pelvic planes, the facilities available for safely terminating the second stage, and the experience of the physician conducting the labor. No well defined rules can be laid down as to the length of this stage of labor. If the patient is in a hospital and the fetal head has been on the pelvic floor for from one to two hours without progress, delivery may be accomplished by episiotomy and the use of low forceps. Such a procedure properly carried out will not increase the hazards of mother or baby and may safeguard their interests. In the home,

under less ideal conditions, it is usually advisable to wait longer. On the other hand, if the fetal head is at a higher level in the pelvis, if the occiput has failed to rotate anteriorly and the head remains arrested in the transverse or the posterior position, if a narrow outlet is present, delivery by forceps becomes a more formidable procedure with increased hazards to the maternal structures and to the baby. These increased dangers usually outweigh any advantages that might accrue from an earlier termination of the second stage. Under these circumstances it is good practice to allow the patient to continue in the second stage and to make the most use of the natural forces of labor as long as the condition of the mother and the baby is not jeopardized.

There are definite dangers to the mother and to her baby in a prolonged second stage. The continued pounding of the fetal head against the soft tissues increases the trauma to important structures. Traumatized tissues heal poorly. Trauma and long labor increase the incidence of infection. There is an increased likelihood of injury to the fetus in a prolonged labor. Excessive molding and continued pressure of the fetal head, particularly when this presenting part remains on the perineum an unusually long time, increase the hazards of intracranial trauma. Natural deliveries following long labor and occasionally even short labor account for an appreciable number of serious and fatal accidents to the fetus.

PARTIAL ONYCHOLYSIS

To the Editor:—A woman aged 72 had her gallbladder and appendix out at 50, at which time a nutmeg liver was observed. About that time a competent cardiologist said of her cardiogram "It shows that she must have had high blood pressure at one time." She had "walking typhoid" about the fall of 1898 with no known complications. Now her blood pressure is 160 systolic, 76 diastolic and pulse 76, with no irregularities noted. In February 1939 she had an emergency operation for torsion of a cyst of the left ovary, the cyst being from 10 to 12 cm. in diameter. Recovery was good except for cystitis and urethritis following catheterization after the operation. This is better but not well. I have hesitated to use sulfanilamide on account of her liver. The thing she worries most about is a finger nail which since last May has been separating from the finger. Now it is about 6 mm. back in the center, while one side is almost normal. However, it is tender and there is a red streak 2 mm. wide all along the distal connection between the finger and the nail. The nail itself appears normal and so does the rest of the finger. None of the nails show any suggestion of thickening or the worm-eaten look seen in tinea. A little help will be appreciated.
M.D., Minnesota.

ANSWER.—The condition is probably partial onycholysis. Local causes act by pressure from beneath, as papules of syphilis, psoriasis, warts or corns, by local inflammation of the nail fold, as eczema and dermatitis venenata, or by simple maceration as in dishwashers and housewives. The experience of H. J. Templeton, of Oakland, Calif., was illuminating. He found and reported five cases (*THE JOURNAL*, Dec. 26, 1931, p. 1950) of partial or complete onycholysis in girls who were occupied in washing paste from catsup bottles all day long. He decided that the only local cause was maceration and discovered that by testing applicants for the job for forty-eight hours he could discover and eliminate the susceptible ones. There was a predisposition to onycholysis in a considerable percentage of the girls in the community.

At present the prevailing theories to account for such a predisposition are avitaminosis and endocrine abnormalities. The latter is supported by the frequent occurrence of onycholysis in young girls with hyperhidrosis, with or without acrocyanosis and by the experience of E. C. Fox, of Dallas, Texas, who studied thirty cases of this disorder. Many of the patients showed symptoms of hypothyroidism and a low metabolic rate. A considerable proportion improved on administration of thyroid and in some of them relapses occurred when the medication was stopped. This paper was read at the 1939 meeting of the American Dermatological Association.

Other therapeutic suggestions were made in *Queries and Minor Notes* (*THE JOURNAL*, Aug. 5, 1933, p. 468; March 13, 1937, p. 910).

LEAD POISONING AND PARKINSONISM

To the Editor:—Is there any known relationship between saturnism and parkinsonism? Is it possible that chronic lead intoxication causes Parkinson's syndrome?
Jose Martorelli, M.D., Argentina

ANSWER.—There is no known relationship between lead intoxication and the Parkinson syndrome. Although chronic lead poisoning (saturnism or plumbism) causes a severe encephalopathy, no cases of parkinsonism have been described. There is, therefore, no information which would indicate that lead intoxication causes the Parkinson syndrome. Manganese is one of the metals known to cause a parkinsonian-like state.

DANGERS OF COCAINE SOLUTION IN NOSE

To the Editor:—The following solution was recommended to me as a nasal spray for chronic sinusitis: 2 parts of cocaine hydrochloride, 5.2 parts of boric acid and sufficient distilled water to make 360 parts, to be used as needed. Kindly advise me if there is sufficient absorption to lead to habit formation if this is used as frequently as every fifteen minutes.

M.D., Ohio.

ANSWER.—Cocaine in aqueous solution is absorbed from all mucous membrane surfaces in all concentrations. The concentration of cocaine in the solution given is 0.55 per cent. A well known authority on treatment and toxicology states that "the use of a one-half per cent solution of cocaine as a spray in catarrh and related conditions is to be condemned because of the imminent danger of the establishment of the cocaine habit." The solution given, used as often as stated, would be decidedly dangerous.

INHERITANCE OF PSORIASIS

To the Editor:—Will you kindly discuss the hereditary aspects of psoriasis? I have a patient whose great grandfather, grandfather, father and one paternal aunt had psoriasis. Also the patient has a sister who has psoriasis and pemphigus. The patient is 23 years old and is entirely normal. She was recently married to a man whose family history is entirely negative. She wants to know what the chances are of her offspring inheriting these diseases.

M.D., Kansas.

ANSWER.—There is no evidence that pemphigus has any hereditary tendency. So far as psoriasis is concerned, numerous authors have commented on the familial tendency. It is not certain whether this tendency is any greater than the average incidence of psoriasis, which runs about 2 per cent of all cutaneous disease. One cannot prophesy, of course, with regard to psoriasis as to whether it will be severe or mild, and the usual advice to the patient is that it is not a contraindication to marriage. The fact that the patient herself has got to the age of 23 and not had psoriasis would be an encouraging factor so far as offspring are concerned. She can, of course, develop psoriasis later, but even then it would not necessarily mean that her child would have psoriasis. Generally speaking it is felt that psoriasis is not contagious, although the exact cause is not known.

DERMATITIS FROM SPECTACLE FRAMES

To the Editor:—Have you any information regarding pyroxalin or zylonite, now widely used in spectacle frames and temple pieces, as a cause of postauricular dermatitis?

S. R. Salzman, M.D., Toledo, Ohio

ANSWER.—Dermatitis from spectacle frames in the beginning is sharply limited to points of contact with the skin, and therefore the dermatitis involves a linear area in front of the ear as well as being postauricular. It most frequently occurs in persons who are sensitive to chromium or to the nickel contained in white gold frames. Less frequently dermatitis results from celluloid, bakelite and various newer plastic compounds. According to White (*The Dermatogesis or Occupational Affections of the Skin*, London, H. K. Lewis & Co. 4:199, 1934) celluloid, better known as xylonite, is a lower nitrate of cellulose dissolved with acetone and camphor. Bakelite is a product formed by condensation of phenol with formaldehyde or similar substances. Variation in proportion of phenol and formaldehyde may result in a consistency like rubber (*ibid.*, p. 250). The substances mentioned are primary skin irritants in higher concentrations and many people are sensitive to them, even to formaldehyde in minute dilutions. In addition, so-called horn rimmed spectacle frames may contain dyes for coloring that are irritating; and chrome and lime used in polishing the frames may remain adherent to the frame and cause dermatitis. Dermatitis from spectacle frames most frequently results in the summer when perspiration is profuse (Weber, Leonard F.: *External Causes of Dermatitis*, *Arch. Dermat. & Syph.* 35:133 [Jan.] 1937). To prove that the spectacle frames are the irritating factor, apply the frame or a portion of it to the forearm with a moist pad and cover with oiled silk and adhesive tape and allow to remain for twenty-four hours as a patch test.

COCONUT WATER AS DIURETIC

To the Editor:—I have been told two or three times by intelligent people who live in the tropics that they have obtained real benefit in various urinary disturbances by the use of coconut water, particularly as a diuretic. Can you tell me if there is any basis for this belief?

Loy Martin, M.D., Baltimore.

ANSWER.—The *Quarterly Cumulative Index* contains only one reference to coconut water in the last twenty years. In this article (Axtmayer, J. H.: *Am. J. Trop. Med.* 12:323 [July] 1932) the following statement is found: "Coconut water is taken by the people of Porto Rico both as a refreshment and as a

diuretic. This latter use is probably based on tradition, as no literature has been found which proves that coconut water is physiologically active in this respect." The author, however, does demonstrate that coconut water is a good source of vitamin B₂ (G).

The composition of coconut water indicates that it is a hypotonic solution and hence should be almost as good a diuretic as tap water. In the tropics it would probably be safer to drink than unboiled water. The beneficial effect would depend on the quantity ingested rather than on any specific virtue of coconut water.

AZOOSPERMIA

To the Editor:—Will you kindly give me the treatment and prognosis in a case of azoospermia? The subject is a man aged 29 who has never had any serious illness and is in good health at present—good physical development, normal sexual function and no detectable abnormalities on physical examination. What is the consensus on the use of Antuitrin-S, vitamin E and Gonadogen?

M.D., Illinois.

ANSWER.—In the treatment of azoospermia the main point is exact diagnosis. It is essential to know whether the condition is due to an obstruction in the tubes or whether the testes themselves do not produce any spermatozoa or whether both conditions are present. This diagnosis can be made only by direct aspiration of the testes. If spermatozoa are found in the aspirated testicular fluid, that the condition is due to tubal obstruction is known at once even if there never has been a history of gonorrhea or epididymitis. If, however, no spermatozoa are found, the condition is of testicular origin and no operation on the tubes is indicated even if they are known to be obstructed.

The treatment of azoospermia may be either surgical or endocrine. The endocrine therapy is not satisfactory and is still being subjected to experimentation with various gonadotropic preparations. Such treatment should be in the hands of a specialist.

If the condition is due to an obstruction in the tubes, the only relief is epididymovasostomy. This operation must not be undertaken unless aspiration has shown that the testes can produce spermatozoa. It must also be remembered that x-rays applied to the testicular region either for diagnosis or for treatment will at times destroy the spermatogenic function of the testes, and the patient must not allow himself to be exposed to their influence.

SMOKING AND SUCKING PLEASURE

To the Editor:—In his article "The Contributions of Psychoanalysis to the study of Psychosis" in *The Journal*, Sept. 2, 1939, page 923, Dr. Ives Hendrick states that, "because many of a psychotic person's acts do gratify needs which are normally dominant during the suckling stage of development, some analysts have been content to explain psychosis as a 'fixation' at the oral stage." Could you inform me whether smoking pipes, cigars or cigarettes can be attributed, to some extent, to the sensations experienced at the suckling stage?

M.D., Michigan.

ANSWER.—To some extent, varying in individual smokers, smoking provides a pleasure from the lips by sucking which was originally a more intense and essential experience in infancy.

ANISEIKONIA

To the Editor:—Relative to the article in the November issue of *Cosmopolitan Magazine*, page 50, by Albert Wiggins, I would appreciate any information you can give me on the subject referred to as "aniseikonia," as I have several patients who would like to visit Dartmouth Clinic if the treatment merits recommendation.

David Glass, M.D., Louisville, Ky.

ANSWER.—Aniseikonia is one of several factors which may cause eyestrain. Of course the commonest causes are errors of refraction and motor difficulties. Many patients with eyestrain not previously relieved by the glasses given them for these defects would be relieved if glasses were better chosen and if the general condition and especially the mental and nervous factors were taken care of.

Aniseikonia, though long known, was only recently given a name, and that because a remedy had been devised. Aniseikonia is a difference in size or shape of the ocular images of the two eyes. If it is great enough to overtax the ability of the patient to combine the images into a single perception it causes eyestrain. The number of patients not otherwise relievable is not large but is definite.

If occluding one eye for a week or two gives relief from the symptoms, it is strong evidence that the cause of the eyestrain is binocular. If motor difficulties can be excluded, then it is probable that aniseikonia is responsible and at any rate should be investigated, either at Dartmouth or at one of the places

where eikonometers are in use (New York: New York Eye and Ear Infirmary and Columbia Medical Center; Baltimore: Wilmer Institute; St. Louis: Washington University).

Unfortunately a negative result from occlusion does not rule out binocular trouble, so that the only conclusive means of diagnosis is an eikonometer test and a trial of eikonic glasses.

"TONGUE-TIE" IN INFANTS

To the Editor:—Is there such a clinical entity as "tongue-tie" in newborn infants? If so, what symptoms can be attributed to it and what corrective measures are advisable? If one recognizes such an entity, is it rare?

M.D., California.

ANSWER.—There is such a clinical entity as "tongue-tie" in infants. Moderate degrees of it are not especially rare. The frenum may be so short as to be almost absent, or the membranous portion of the frenum may extend or be inserted so far forward that the tongue cannot be raised or protruded normally. The tongue may be slightly bifid at the tip as a result. "Tongue-tie" never causes difficulty in nursing, presents little interference, if at all, with articulation, and never causes delayed speech. Unless "tongue-tie" is serious it rarely requires treatment. Moderate gradations in which the tongue can be protruded to the external margin of the lips may safely be let alone, as elongation of the frenum occurs as the infant grows. Extreme cases can be remedied by the simple procedure of raising the tip of the tongue and cutting through the filmlike frenum, care being taken not to cut the vessels. Undoubtedly the frenum is clipped more often than necessary.

HAY FEVER DESENSITIZATION AND IMPOTENCE

To the Editor:—I have been treating a white man, aged 46, for hay fever. His symptoms lasted through late spring and the entire summer, and scratch tests showed sensitivity to the local grasses and weeds. He received the usual course of injections for desensitization during 1939, with marked relief. At the end of the hay fever season he stated that he had been relatively impotent (sexually) since starting treatment. I had intended to continue the desensitization therapy throughout the year, but after I had given him his monthly injections for October 1939 he again complained of impotence for about a week. (The symptom had cleared up, incidentally, before this injection.) He complains also of vague backache and irritability. He has had no constitutional reactions nor any local reactions of consequence to the administration of pollen extract. Results of physical examination, as well as urine examination, are negative. The history is unimportant except for gonorrhea in 1919 and malaria in 1908 and 1920, while he was in the tropics. Have such reactions been reported? Is any special therapy indicated if the impotence is caused by the pollen extract? The patient is convinced that the injections and the impotence are cause and effect. M.D., New York.

ANSWER.—No mention has been found in the literature to impotence induced by pollen injections. It is possible that the condition is of psychogenic origin. It would be interesting to try an injection of sterile saline solution with possibly a little glycerin to simulate a pollen injection and observe the effect.

LEAD FREE CRAYON CHALKS

In The Journal Nov. 4, 1939, page 1755, appeared a Query and Minor Note dealing with the hazards from lead in chalks. Several manufacturers have since written to the Editor reporting the availability of colored crayons and chalks free from this dangerous element. The following brands are stated to be entirely free from lead:

Hygieia Forsyte	American Crayon Company,
Ambrite	Sandusky, Ohio
Poster Pastello	
Alphasite	Weber Costello Company,
Alphacolor	Chicago Heights, Ill.
White Crown	
Anduseptic	Binney & Smith Company,
Atlantic	New York.

STAINING OF LIPS FROM SMOKING

To the Editor:—In The Journal Oct. 14, 1939, page 1510, a query appeared, "Stained Lips from Smoking," in which I am interested. In answer it is said that the experience seems unique. I have had the same personal experience. I have smoked for many years but it is only recently that my lips have been stained from smoking. I have not changed my habits: The daily number of cigarettes I smoke is the same and the tobacco used is identical. As I shave my mustache, I became aware of the stain on my lips from the first. It appears on the side on which I hold the cigaret. The color rubs off easily and completely with a handkerchief. However, if it is not removed immediately after smoking it becomes dark. If I hold the cigaret with my lips on the other side of my mouth the stain appears on that side. If I use a short cigaret holder the stain does not appear. I have asked several smokers whether they have had such an experience and they say they have not. So it really seems that the experience is rare.

Jean Didié, Secteur Postal 390, France.

Council on Medical Education and Hospitals

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in THE JOURNAL, June 17, 1939:

Hospitals Approved for Intern Training

City Hospital, Mobile, Ala.
St. Joseph's Hospital, Alton, Ill.
Cook County Hospital, Chicago.
Murray Hospital, Butte, Mont.
Perth Amboy General Hospital, Perth Amboy, N. J.
Unity Hospital, Brooklyn.
Our Lady of Victory Hospital, Lackawanna, N. Y.
Leonard Hospital, Troy, N. Y.
James Walker Memorial Hospital, Wilmington, N. C.
St. Mary's Infirmary, Galveston, Texas.
Kanawha Valley Hospital, Charleston, W. Va.

Residencies and Fellowships

Anesthesiology
Michael Reese Hospital, Chicago.
Presbyterian Hospital, New York City.
St. Vincent's Hospital, New York City.
Presbyterian Hospital, Philadelphia.

Cardiology
House of the Good Samaritan, Boston.

Fractures
Presbyterian Hospital, New York City.

Mixed
St. Mary's Hospital and Sanatorium, Tucson, Ariz.
Malden Hospital, Malden, Mass.
Parkside Hospital (col.), Detroit.
Alexian Brothers Hospital, St. Louis.
Christian Hospital, St. Louis.
Jewish Sanitarium and Hospital for Chronic Diseases, Brooklyn.
Elizabeth Buxton Hospital, Newport News, Va.
St. Luke's Hospital, Richmond, Va.

Neurosurgery
Johns Hopkins Hospital, Baltimore.
Barnes Hospital, St. Louis.

Ophthalmology
Hospital of the University of Pennsylvania, Philadelphia.

Ophthalmology-Otolaryngology
Louisville City Hospital, Louisville, Ky.

Otolaryngology
Michael Reese Hospital, Chicago.
Presbyterian Hospital, New York City.

Pathology
French Hospital, San Francisco.
Sibley Memorial Hospital, Washington, D. C.
University Hospital, Augusta, Ga.
Passavant Memorial Hospital, Chicago.
St. Francis Hospital, Wichita, Kan.
Worcester City Hospital, Worcester, Mass.
Jewish Hospital, St. Louis.
Mount Sinai Hospital, New York City.
Roosevelt Hospital, New York City.
Sydenham Hospital, New York City.

Plastic Surgery
Presbyterian Hospital, New York City.

Radiology
Hartford Hospital, Hartford, Conn.
Sibley Memorial Hospital, Washington, D. C.
Veterans Administration Facility, Washington, D. C.
Walter Reed General Hospital, Washington, D. C.
Passavant Memorial Hospital, Chicago.
Veterans Administration Facility, Hines, Ill.
Indiana University Hospitals, Indianapolis.
Barnes Hospital, St. Louis.
Homer G. Phillips Hospital for Colored, St. Louis.
New York Polyclinic Medical School and Hospital, New York City.
Roosevelt Hospital, New York City.
Watts Hospital, Durham, N. C.
St. Vincent's Hospital, Portland, Ore.
Abington Memorial Hospital, Abington, Pa.
Bryn Mawr Hospital, Bryn Mawr, Pa.
Graduate Hospital of the University of Pennsylvania, Philadelphia.
Hospital of the Protestant Episcopal Church, Philadelphia.
Presbyterian Hospital, Philadelphia.
John Gaston Hospital, Memphis, Tenn.
Methodist Hospital, Memphis, Tenn.
Vanderbilt University Hospital, Nashville, Tenn.
Columbia Hospital, Milwaukee.

Surgery
Michael Reese Hospital, Chicago.
Methodist Episcopal Hospital, Indianapolis.
Beverly Hospital, Beverly, Mass.
Missouri Baptist Hospital, St. Louis.
Jefferson Hospital, Roanoke, Va.

Thoracic Surgery
Hudson County Tuberculosis Hospital, Jersey City, N. J.
Mount Morris Tuberculosis Hospital, Mount Morris, N. Y.
Muirdale Sanatorium, Wauwatosa, Wis.

Tuberculosis
Mississippi State Sanatorium, Sanatorium, Miss.
Homer G. Phillips Hospital for Colored, St. Louis.
Essex Mountain Sanatorium, Verona, N. J.
Mount Morris Tuberculosis Hospital, Mount Morris, N. Y.
Riverside Hospital, New York City.
Franklin County Sanatorium, Columbus, Ohio.
Muirdale Sanatorium, Wauwatosa, Wis.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examination of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, December 30, page 2446.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 5. Sec., Dr. W. W. Council, Box 561, Juneau. ARKANSAS: *Basic Science*. May or June. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular)*. Little Rock, June 6-7. Sec., Dr. D. L. Owens, Harrison. *Medical (Eclectic)*. Little Rock, June 6-7. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, Jan. 17. *Written examination*. Los Angeles, Feb. 26-29. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science*. New Haven, Feb. 10. Chairman, Dr. Charles M. Bakewell, State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical*. Hartford, March 12-13. Sec., Dr. T. P. Murdock, 147 W. Main St., Meriden. *Homeopathic*. Derby, March 12-13. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: *Examination*. Dover, July 9-11. *Reciprocity*. Dover, July 16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science*. Washington, April 22-23. *Medical*. Washington, May 13-14. Sec., Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: *Basic Science*. De Land, May 25. Sec., John F. Conn, De Land. *Medical*. Tampa, June 17-18. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Joint-Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDaho: Boise, April 2. Dir., Bureau of Occupational Licenses, Mr. H. B. Whittlesey, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Jan. 23-25. Acting Superintendent of Registration, Mr. Lucien A. File, Springfield.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis. Iowa: *Basic Science*. Des Moines, Jan. 9. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, State Department of Health, Capitol Bldg., Des Moines.

MAINE: Portland, March 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MASSACHUSETTS: Boston, March 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Ann Arbor and Detroit, June 12-14. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Jan. 16-18. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: *Reciprocity*. Helena, April 1. *Examination*. Helena, April 2-3. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEVADA: *Reciprocity with oral examination*. Carson City, Feb. 5. Sec., Dr. Frederick M. Anderson, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, March 14-15. Sec., Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, June 18-19. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 8-9. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 29-Feb. 1. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

OREGON: *Basic Science*. Portland, Feb. 24. *Applications must be on file not later than Feb. 7*. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PUERTO RICO: Santurce, March 5. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

SOUTH DAKOTA: Pierre, Jan. 16-17. Dir., Medical Licensure, Dr. G. J. Van Heuvelen, State Board of Health, Pierre.

TEXAS: June 20-22. Sec., Dr. T. J. Crowe, 918-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

WASHINGTON: *Basic Science*. Seattle, Jan. 11-12. *Medical*. Seattle, Jan. 15-17. Acting Dir., Mr. Dave S. Cohn, Olympia.

WEST VIRGINIA: Charleston, March 4-6. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Madison, Jan. 9-11. Sec., Dr. E. C. Murphy, 314 E. Grand Ave., Eau Claire.

WYOMING: Cheyenne, Feb. 5. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

Connecticut July Examination

Dr. T. P. Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held at Hartford, July 11-12, 1939. The examination covered ten subjects and included seventy questions. An average of 75 per cent was required to pass. Forty candidates were examined, twenty-one of whom passed and nineteen failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1939)		81.5
State University of Iowa College of Medicine.....	(1937)		77.8
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1937)		78.1
Harvard Medical School.....	(1937)	75.3, 77.1	82.5
Tufts College Medical School.....	(1938)	75, 77.1*	
Columbia University College of Physicians and Surgeons.....	(1939)	75, 75.8, 76.9*	

Cornell University Medical College.....	(1939)	78
Long Island College of.....		76.7
New York University.....		79.2
Temple University Sch.....		76.7, 80
University of Vermont.....		77.2
Marquette University.....		75
Medizinische Fakultät.....		75.6, 75.8*
Osteopath.....	(1932)†	

School	FAILED	Year Grad.	Per Cent
Loyola University School of Medicine.....	(1939)		72
Tufts College Medical School.....	(1938)		72.1
Duke University School of Medicine.....	(1936)		67.9
Medizinische Fakultät der Universität Wien.....	(1913)		67.8,
(1927) 73, (1934) 64.7			
Deutsche Universität Medizinische Fakultät, Prag.....	(1936)		72.6
Eberhard-Karls-Universität Medizinische Fakultät, Tübingen.....	(1922)		65.9
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen.....	(1934)		65.3
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....	(1921)		73.2
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main.....	(1938)		62.8
Schlesische-Friedrich-Wilhelms Universität Medizinische Fakultät, Breslau.....	(1922)		71.9
Universität Heidelberg Medizinische Fakultät.....	(1933)		69.9
National University of Athens School of Medicine.....	(1930)		55.2
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia.....	(1937)		61.3
Regia Università di Napoli Facoltà di Medicina e Chirurgia.....	(1936) 67.5, (1937)		68.8
Université de Genève Faculté de Médecine.....	(1938)		70.2
Osteopath.....	(1933)‡		

Thirty-two physicians were licensed by endorsement on July 26. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Stanford University School of Medicine.....	(1937)	California
Yale University School of Medicine.....	(1934), (1936), (1937, 2) N. B. M. Ex.	
George Washington University School of Medicine.....	(1934)*	New York
Georgetown University School of Medicine.....	(1936) N. B. M. Ex.	
State University of Iowa College of Medicine.....	(1936) N. B. M. Ex.	
Johns Hopkins University School of Medicine.....	(1935)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1936)	Maryland
Harvard Medical School.....	(1926)* N. B. M. Ex., (1934)	New York, (1935) Massachusetts, (1936, 2) N. B. M. Ex.
Tufts College Medical School.....	(1935)	Maine, (1937, 2) N. B. M. Ex.
St. Louis University School of Medicine.....	(1937)	N. B. M. Ex.
Columbia University College of Physicians and Surgeons.....	(1925)	New York
Cornell.....	(1934)*	New York
Fordham.....	(1919)*	New York
Long Isl.....	(1925)	New York
University of Cincinnati College of Medicine.....	(1929)	Ohio
University of Pennsylvania School of Medicine.....	(1932)	N. B. M. Ex., (1934) Pennsylvania
University of Vermont College of Medicine.....	(1938)	N. B. M. Ex.
University of Virginia Department of Medicine.....	(1932)*	Virginia
Marquette University School of Medicine.....	(1939)	N. B. M. Ex.
University of Wisconsin Medical School.....	(1936)	California
McGill University Faculty of Medicine.....	(1937)	N. B. M. Ex.

* Licenses have not been issued.

† Examined in medicine and surgery and certified in surgery. License has not been issued.

‡ Examined in medicine.

Arizona Reciprocity Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports three physicians licensed by reciprocity Oct. 4, 1939. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Tulane University of Louisiana School of Medicine.....	(1933)		Louisiana
University of Michigan Medical School.....	(1926)		Michigan
St. Louis University School of Medicine.....	(1925)		Missouri

District of Columbia November Report

Dr. George C. Ruhland, secretary, Commission on Licensure, reports the written examination held by the District of Columbia Board of Examiners in Medicine and Osteopathy, at Washington, Nov. 13-14, 1939. The examination covered nine subjects and included sixty questions. An average of 75 per cent was required to pass. Nineteen candidates were examined, all of whom passed. Eleven physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine.....	(1936)		79.4
80.3, (1938) 75.9, 81.1, 83.3, 87.3			
Georgetown University School of Medicine.....	(1938)		79.1, 82.4
University of Michigan Medical School.....	(1937)		75, 77.5
University of Wisconsin Medical School.....	(1933)		83.4
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1938)		82.1
University of Michigan Medical School.....	(1932)		89.4

University of Oregon Medical School.....	(1936)	88.2
University of Pennsylvania School of Medicine.....	(1938)	81
Medical College of the State of South Carolina.....	(1938)	81.1
Meharry Medical College.....	(1938)	78.7
University of Alberta Faculty of Medicine.....	(1929)	82.3
University of Toronto Faculty of Medicine.....	(1935)	80.6

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
George Washington University School of Medicine..	(1938, 3)	N. B. M. Ex.
Georgetown University School of Medicine.....	(1937, 2), (1938)	N. B. M. Ex.
Northwestern University Medical School.....	(1934)	N. B. M. Ex.
Johns Hopkins University School of Medicine.....	(1937)	N. B. M. Ex.
Boston University School of Medicine.....	(1937)	N. B. M. Ex.
New York University College of Medicine.....	(1938)	N. B. M. Ex.
University of Vermont College of Medicine.....	(1931)	N. B. M. Ex.

Book Notices

Pulmonary Tuberculosis: Pathology, Diagnosis, Management and Prevention. By George Gregory Kayne, M.D., M.R.C.P., D.P.H., Tuberculosis Medical Officer, Middlesex County Council, Walter Pagel, M.D., Pathologist, Papworth Village Settlement, and Laurence O'Shaughnessy, M.D., F.R.C.S., Consulting and Thoracic Surgeon to Preston Hall, City of Birmingham Tuberculosis Scheme, Nottinghamshire County Council and the Grosvenor Sanatorium. Cloth. Price, \$13. Pp. 565, with 259 illustrations. New York, Toronto & London: Oxford University Press, 1939.

Dividing the material into the major chapters on pathology, diagnosis, prognosis, management, epidemiology and prevention, the authors have done a perfect job in simplification of the subject and in its presentation. The chapters are splendidly illuminated with charts, microscopic and macroscopic illustrations, diagrams, tables, reproductions of x-ray plates, everything, in short, that is necessary for thorough visualization of the subject. Many references are made to the American medical literature and, thanks to the influence of the International Union Against Tuberculosis, the nomenclature is ours. It is regrettable that the influence of the union and of scientific internationalization in general is hindered by disturbed world conditions, by wars and rumors of war, which canceled the meeting at Lisbon two years ago and the meeting in Berlin this year. Each chapter in the book is excellently supplemented by subject summary, by references, by additional bibliography and, in the case of the chapter on management of pulmonary tuberculosis, by an appendix of charts and illuminating diagrams, and finally by a comprehensive index of subjects and personal names. As was to be expected from the purpose of the contribution and the scope of the material, the text presents nothing really new. The set-up, however, is beautiful; the style is good and easy to read. The authors have done an excellent job of simplifying and connecting to a coherent whole the subject of tuberculosis. Their purpose was to present a book for the tuberculosis specialists and the private practitioners rather than a textbook for medical students. The purpose has been well fulfilled. There are, of course, certain disappointments that detract somewhat from an otherwise excellent work. Among these may be mentioned lack of stress on the public health angle of collapse therapy and some misconceptions concerning BCG. It was stated, for instance, that BCG is not used in America, with one exception. This is not correct. In America BCG is used in New York, Philadelphia, Nashville, Chicago and Montreal. It is similarly unfortunate, in view of present day interest, that the multiple scarification method of administration of the vaccine was not given. It is held much to the credit of the authors that they take a definite stand in the various controversial problems in tuberculosis.

Primitive Tuberculosis. By S. Lyle Cummins, C.B., C.M.G., M.D., Director of Research, Welsh National Memorial Association. Cloth. Price, 10s. 6d. Pp. 213, with illustrations. London: John Bale Medical Publications, Ltd., 1939.

Cummins is probably better qualified than any other living specialist to write on the subject of his text, and he reminds one of Colonel Bushnell's earlier fancy and almost uncanny interpretations from the realm herewith brought down to date. The narrative is filled with interesting information and is delightful reading. In the preface he notes that "Primitive Tuberculosis" is apt to come as an anticlimax or even as an irrelevance to many engaged in the more vivid sections of the vast subject of tuberculosis. Yet the subject ought to have an

interest for all, if only life were long enough and time an element to be enjoyed rather than an enemy to be dealt with. His hope is that this little book may awaken this interest in the minds of many who have not had any opportunity of first hand study of the disease abroad. His first chapter, which is well chosen, dwells on wild and domestic life in relation to tuberculosis. In this he demonstrates the simple expedient of placing a glass front to the monkey cages in the zoo to exclude sputum and infection from human beings. He points out that even in domesticated animals it is only among those whose state of existence is intensely modified to suit the needs and habits of men that the disease is at all common. He believes that what is true of the animal world in general must also be true of man and in the subsequent chapters he discusses the problem as it is applicable to the various types of cultural community of the human race.

The term "primitive" as applied to a section of the human race he believes inexpedient to define too exactly. Yet one cannot well use the word "native" as an alternative, since every national or tribal entity is "native" on its own soil. On the whole it is best to specify it by its name when writing of any particular tribe or race and to resort to the word "primitive" as many others have done when dealing with the problem as a general one. The word is not interchangeable with "isolated" though, to remain "primitive" to any considerable degree, a community must be "isolated" to some extent or in some way for practical purposes. The author's careful treatment of the various phases of "primitive tuberculosis" is entertainingly taken up in twenty-four chapters including subjects on the native outlook, tuberculosis of Africans, the tuberculin test, report on native miners, gold mining industry, Africans by descent or American Africans and tuberculosis in India; and, to add to one's fascination, the prophylaxis by means of BCG and theories to explain differences in susceptibility are taken up with careful consideration. A bibliography of about twelve pages and 180 references is appended. The general trends of this volume may be gleaned from some of the points made in the last, twenty-fourth, chapter of conclusions, given herewith:

Tuberculosis will always be the enemy of primitive races and will take its toll the more heavily the more rapid is their emergence from primitive to civilized conditions. In the majority of cases the response of the community will be relatively severe and the natives will pay for their "virginity" to tuberculosis by the large number of people contracting the disease and dying from it within a short time. The outbreak will bear some resemblance to what we see at home. . . . But the changes produced by the disease will be of the type characteristic of such communities, a generalized and diffuse type which is distinguishable from what we see in European hospitals. As things are going, the natural laws that govern bacterial infections appear to be militating against tuberculosis in our midst. One thing is certain: that the child, whether in our own race or in the primitive, is alike in having no acquired immunity. The type of disease is similar in the two when disease ensues. Disease nearly always ensues in the Negro infant, whereas it is the common experience of our race to bring up healthy but tuberculin-positive children. One must talk with reference to averages and, while it is possible to produce exceptional cases, it is easy for the infant of tried stock to elaborate immunity and overcome his infection on the average whereas it is hard for the primitive child to do so. In no country is the infant born with immunity. But the infant of European type usually passes on to a tolerance of the infection and goes through life without disease, whereas the infant of primitive blood is likely to die of natural tuberculosis if infected, and even the adult exposed to infection usually gets it after the manner of a child.

Whether one agrees with the author's conception of immunity or whether one follows the other school of increased susceptibility subsequent to infection, there comes a time when a book is very worth while reading, and this is such a volume. Each chapter will be enjoyed with increasing interest. The English is British or, more specifically, Welsh in character, but even this is attractive as being a little different from American English. The type is pleasing and readable, and the book is buckram bound of a size adapted to pocket transport. It should attract all interested in medicine and health in general.

Œuvres de Pasteur. Réunies par Pasteur Vallery-Radot, professeur agrégé à la Faculté de médecine de Paris. Tome VII: Mélanges scientifiques et littéraires. Table des noms cités. Table chronologique. Index analytique et synthétique de l'œuvre de Pasteur. Paper. Price, 200 francs. Pp. 666. Paris: Masson & Cie, 1939.

This the seventh and last volume of Pasteur's collected works contains communications and scientific notes on diverse subjects, reports to the Conseil d'hygiène, articles and notes relative to teaching at the Ecole normale supérieure, and lessons in physics and chemistry as applied to art (Pasteur was professor for some time at the Ecole des beaux-arts). At the beginning of the volume are three remarkable letters by Pasteur (1862, 1863, 1867) which show that at that time he realized the larger significance of his researches on fermentation. A good many of the items in this volume, some of special importance, are published for the first time. There is an alphabetical table of the names cited in the seven volumes and a chronologic table of Pasteur's publications. At the end is a valuable detailed analytic and synthetic index of Pasteur's writings, prepared by the editor, Pasteur Vallery-Radot, which facilitates finding what Pasteur has written on this or that subject, including certain topics, e. g. toxins, germ carriers and microbic association, which currently are regarded as of postpasteurian development. All told, the seven stately volumes contain more than 4,200 printed pages. Their publication is a fine achievement. The work of the editor is uniformly excellent. The works of Pasteur have been given an appropriate and worthy permanent form.

The Science and Art of Joint Manipulation. By James Mennell, M.A., M.D., B.C., Consulting Physiotherapist, St. Thomas's Hospital, London. Vol. 1: The Extremities. Cloth. Price, \$4.50. Pp. 233, with 284 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1939.

It is not an easy task to present a subject as controversial as is the question of manipulative surgery to the circle of a critical profession. Mennell, in his latest book, has done so rather convincingly. Because of the careful restraint with which he handles physiologic and anatomic facts as a background for his indications, there is no tendency to admit any fantastic or forced theories into his field of reasoning. In the introductory chapters, which are devoted to the mechanical aspect of joint disorders, little was found to which exception could be taken on theoretical grounds, and there was much which is excellent. Then also there is a great deal of clinical material adduced, accurately observed and keenly interpreted, particularly in chapter III on referred pain. The actual technic of manipulations of joints occupies a large portion of the book and is so replete with details that it must be read entire and not in abstract. This pertains to the movements of the digital joints, the carpal and metacarpal joints, elbow, shoulder, the metatarsophalangeal joint, the ankle, the tibia and the knee. As may be expected, the shoulder and knee joint are most thoroughly discussed, but each of the joints is generously treated in special chapters. The manipulation of the back is left to a special volume. The book is written in clear, precise language, calmly, without pedagogic vehemence and without pretense. It contains a wealth of information and, even for those who are disinclined to accept the principle of manipulation treatment, it is a mine of useful information.

Diet in Health and Disease. Edited by Sir Humphry Rolleston, Bt., G.C.V.O., K.C.B., M.D., and Alan A. Moncreiff, M.D., F.R.C.P. Published on behalf of The Practitioner. Cloth Price, 14s Pp 382. London: Eyre & Spottiswoode, Ltd., 1939.

This volume consists of a number of essays on dietetic subjects. In the introduction E. P. Cathcart discusses the importance of the diet in the management of the sick and observes that there might be some advantage to the variations in the daily food intake which undoubtedly occur in daily life. "No one," says he, "except in the most exceptional of circumstances, would advocate keeping an individual in a room of relatively high uniform temperature. Change and variety, generally speaking, are physiologically sound." The twenty-eight chapters discuss such problems as practical dietetics, sickroom menus and recipes, the dispensing of special diets, diets in the treatment of acute fevers, pulmonary tuberculosis, gastric diseases, constipation and other intestinal disorders, diseases of the liver and biliary system, endocrine disorders, diabetes mellitus, disorders of the cardiovascular system, kidney disease, nervous and mental dis-

orders, allergic conditions, dermatologic diseases, rheumatism and gout, and diet in pregnancy and lactation, childhood and old age. The diet in convalescence and in different seasons is also discussed in brief fashion. There are brief essays also on alcohol and on the effect of cooking on food. This volume will be of interest not only to the practitioner but also to the student of nutrition. So little knowledge is established about the value of dietetics in certain diseases that the prevailing opinion of medical experts, even though this may be only an enlightened empiricism, shows the need for further investigation as well as offers suggestions to the intelligent reader on the trend such investigation might take.

Stations de cure de l'U. R. S. S. Recueil d'articles basés sur les matériaux de l'Institut central de balnéologie à Moscou. Sous la rédaction de I. A. Pertsov. Cloth. Pp. 270, with illustrations. Moscow: Société de relations culturelles entre l'U. R. S. S. et l'étranger, 1938.

This is a small volume in French issued by the Central Institute of Balneology in Moscow with the aim of presenting the recent developments in climatologic and balneologic therapy in Russia. As is well known, the climatic and mineral water resources of Russia are many and varied. There are, according to this monograph, more than 2,500 localities, each exhibiting a particular medicinal advantage. The spas of the Caucasus are famous for their mineral water, which may be radioactive, carbonated, sulfured, ferruginous or thermal. The "naphthalan" treatment and the "koumiss" treatment for tuberculosis are particularly Russian. The author stresses the point that balneologic therapy in Russia is one link in the chain of prophylactic medical measures aiming to improve the health of the workers. The development of balneology has been the result of a unified central plan. The Central Institute of Balneology in Moscow, with its local branches, supervises the research and clinical studies of the problems in connection with the various climates and waters. The patient is referred for a special treatment by his dispensary physician or by the clinic, and the treatment is paid for by the syndicate, the union or the social insurance. The treatment includes, in addition to the use of water or mud baths, physical exercises, physical therapy and special dietetic regimens. Among the model sanatoriums the author mentions that of Sochi-Matsesta in the Crimea and the Artek Colony for Children situated on the southern shore of the Crimea. The information contained in the monograph is of sociologic rather than scientific value. The reader can obtain from it a good general idea of what has been accomplished along these lines under the Bolshevik régime.

Minor Mental Maladjustments in Normal People Based on Original Autobiographies of Personality Maladjustments: A Casebook for the Use of Students of Mental Hygiene, Psychology, Education, Child Development, Sociology, and the Formation of Personality Traits. By J. E. Wallace Wallin, Ph.D., Director of Division of Special Education and Mental Hygiene of the Delaware State Department of Public Instruction and the Wilmington Public Schools. Cloth. Price, \$3. Pp. 298. Durham, North Carolina: Duke University Press, 1939.

This is essentially a casebook containing original autobiographies of cases of maladjustment. The book first introduces the topic by a general consideration, following it with some cases and an insight as to methods of analysis. Then come reports of actual cases which are concerned with fears and phobias, with dreams, somnambulism, emotional disturbances, physical handicaps, and attitudes. The cases are neatly presented with suitable illustrations. As a storehouse of autobiographic material, the material will be exceedingly useful to teachers and writers, who will find the information of value.

Medical Occupations for Girls: Women in White. By Lee M. Klinefelter. Cloth. Price, \$2. Pp. 320, with 59 illustrations. New York: E. P. Dutton & Co., Inc., 1939.

The author of this book has also written on occupations for boys under "Medical Occupations for Boys." "Medical Occupations for Girls" includes not only medicine and its specialties but also dentistry, chiropody, medical technology, nursing, occupational therapy, optometry, pharmacy, physical therapy and x-ray technic. The author writes the book as if he were a physician giving information to girls. Unfortunately the author is not really familiar with many of the aspects of modern medical education and in occasional places he has departed some-

what from fact. Thus he gives the impression that a woman can get into most of the medical schools of the United States on about the same basis as a man. It would have been much more honest to say that the number of women admitted is exceedingly limited and that the chances of women getting into medicine are not nearly so great as those of a man. In the same way, it is suggested that women are equally well adapted for most of the medical specialties. Yet there are few who have done well in urology or orthopedic surgery.

If there is any fault to find with this volume it is concerned with its optimism. Nevertheless, the young girl who is trying to make up her mind as to the various fields of medical interest in which she might become employed will find much that is of interest and value in this book.

Essentials of Physiological Chemistry. By Arthur K. Anderson, Ph.D., Professor of Physiological Chemistry, The Pennsylvania State College, State College, Pa. Second edition. Cloth. Price, \$2.75. Pp. 323, with 36 illustrations. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited, 1939.

This elementary textbook on the fundamentals of biochemistry is intended especially for use by students of home economics. Accordingly it has been designed to furnish a background for courses in dietetics and nutrition. The book fulfils its purpose exceedingly well. The material in each chapter is presented in didactic style with a minimum of names of investigators and with little information about the experimental procedures which have led to the conclusions given. Doubtless this method of presentation is necessary for an elementary course. There are two or three references at the end of each chapter to other books on the subject. The volume fulfils its purpose of providing the essentials of chemical physiology that are required for a further study of nutrition by college students.

Recherches sur l'embryologie du système nerveux central de l'homme. Par André Barbé, médecin de la Salpêtrière. Préface de A. Souques. Paper. Price, 250 francs. Pp. 340, with 275 illustrations. Paris: Masson & Cie, 1938.

The author of this large and lavishly illustrated book had fifty-two human fetuses available for study. He systematically photographed, cut and stained the central nervous system of forty-four of them, although the great majority were so poorly preserved as to be worthless even for gross study. He seems to be quite unaware of the splendid monographs of Hochstetter and Streeter, which are based on normal, admirably preserved and prepared human material; indeed, the only original contributions to which he refers are the papers of Wilhelm His. He fails consequently to recognize as such the distortions of postmortem maceration and other artefacts. A few of the older specimens, prepared by a silver method, are worth describing, but one looks in vain for new details and for the answers to important questions which they might have given us. It is sad to see so much space and printers' ink wasted at the present time, when much important descriptive work can be published only in abstract.

Nitrous Oxide-Oxygen Anesthesia: McKesson-Clement Viewpoint and Technique. By F. W. Clement, M.D., Director of Anesthesia at Flower Hospital, The State Hospital for the Insane, Lucas County Hospital, Toledo Dental Dispensary, Toledo, Ohio. Cloth. Price, \$4. Pp. 274, with 70 illustrations. Philadelphia: Lea & Febiger, 1939.

As the author says, "This book is an attempt on the part of the author to reproduce and preserve the teachings and findings of the 'Master' [Dr. E. I. McKesson], as well as his own impressions and experiences resulting from the use of nitrous oxide-oxygen over a period of many years." It is fortunate for those who have occasion to anesthetize with nitrous oxide-oxygen to have available in book form the techniques employed by Drs. McKesson and Clement.

The book is no doubt designed for those readers who have occasion from time to time to refer to it for information on the management of patients for various types of operations. No doubt this explains the work's frequent repetition of the fundamental steps employed in the administration of nitrous oxide-oxygen in the many types of operations in which it can be used.

Subjects discussed are charting the patient's condition, interpretation and treatment of shock, premedication and the use of carbon dioxide. A comparison is made between nitrous oxide

and oxygen with ethylene, cyclopropane and the mixture nitrous oxide-oxygen-ether. Use of the endotracheal catheter is advocated. The carbon dioxide absorption technic is discussed. The use of nitrous oxide-oxygen for dental anesthesia and analgesia is discussed at length, and a paper by Dr. McKesson is appended which relates the development of his type of gas machine and the reasons why it is allegedly better than others. This book is particularly valuable because of the enormous clinical experience and the high degree of skill of the author, both of which are reflected in the volume.

A Textbook of Microbiology. By Kenneth L. Burdon, Ph.D., Sc.M., Ph.D., Assistant Professor of Immunology and Bacteriology, Louisiana State University School of Medicine, New Orleans. Second edition of "A Textbook of Bacteriology." Fabrikoid. Price, \$2.75. Pp. 638, with 103 illustrations. New York: Macmillan Company, 1939.

The recent rapid advances in certain fields included in the science of microbiology necessitate frequent revision of textbooks and somewhat tax the ingenuity of authors in attempting to present new material to elementary students. This is particularly true in the field of viruses. The author of this book has rewritten and enlarged an earlier volume, intended primarily for nurses, in order to include college students as well as to bring the text in line with modern developments. This book differs from others intended for the same purpose mainly in an attempt to discuss the bacteriology of diseases on the basis of "the region of the body principally affected." While this may be fundamentally sound, it is obvious that certain arbitrary groupings must be made. Meningitis is discussed with eye and ear infections and tuberculosis is assigned a separate chapter. Undulant fever is classed with diseases acquired from animals, and virus diseases are divided between infections of the respiratory tract and a discussion of their own. The book is excellently written. Although it certainly includes more material than can possibly be presented in the usual nurse's course, it does not contain too much for elementary college or premedical study.

Post-Mortem Appearances. By Joan M. Ross, M.D., B.S., M.R.C.S., Reader in Pathology, University of London, London. Fourth edition. Cloth. Price, \$2.50. Pp. 275. New York & London: Oxford University Press, 1939.

The fourth edition of this book forms a useful compendium of information difficult to obtain from any other single source. The general practitioner occasionally called on to perform his own necropsies will receive much information to aid his task.

Gross changes are described in deaths from all causes and are conveniently grouped under ten headings, including the main systems, infections and death from causes other than disease. The new chapter on examination of stillbirths and neonatal deaths deserves favorable comment.

The description of procedure in postmortem examinations offers a primary incision from the symphysis menti to the symphysis pubis, which, for cosmetic reasons, is less desirable than the pectoral V incision practiced in this country.

The appendix contains a useful group of tables including organ weights, fetus weights and lengths, fetal age, ossification centers and tooth eruption. Students, interns and residents will find this a small, handy book for quick reference.

Cirurgia do megaesôfago. Por Edmundo Vasconcelos, professor de técnica cirúrgica e cirurgia experimental da Faculdade de medicina da Universidade de S. Paulo, e Gabriel Botelho, assistente de técnica cirúrgica e cirurgia experimental da Faculdade de medicina da Universidade de S. Paulo. Paper. Pp. 434, with 150 illustrations. São Paulo: Companhia Editora Nacional, 1937.

In an elaborate monograph the authors discuss in detail the subject of mega-esophagus or cardiospasm. The various theories of the causation of the disease are well considered. Since the generally accepted theory of the etiology of cardiospasm surmises that it is the result of disturbance in the nerve supply of the esophagus, the chapter on enervation is particularly interesting. The physiology of the normal esophagus and cardia is discussed at length. Experimental studies in the production of the disease in animals are completely considered. More than a hundred pages is devoted to the types of treatment that have been employed in the management of the disease, and the various types of plastic operations and expanding dilators are discussed

quently than is commonly realized. Their incidence seems to be inversely proportional to the time of recumbency. Therefore further investigation is necessary if the use of spinal anesthesia for comparatively minor surgical procedures is to continue. The authors adopted Harrison's proposal of administering dextrose solution intravenously in an effort to reduce the number of headaches, but as yet their series of patients so treated is too small to require comment.

Determining Coagulation Time of Blood.—Humbert outlines the method of determining the coagulation time that has been in use in the Wheatley-Provident Hospital for five years without the occurrence of a single fatality due to inaccurate determination. In carrying out the procedure the finger is cleansed and punctured in the usual manner. The first drop of blood is discarded. The second drop of blood is allowed to remain on the finger for two minutes; then the corner of a piece of absorbent paper is placed at the center of the drop of blood, and the blood is absorbed. If coagulation has started, a ring of drying blood will be seen at the periphery. The blood will coagulate there more quickly and remain adherent to the skin. If no ring is seen another drop is allowed to remain for four minutes, and the procedure is repeated. If still there is no ring, the procedure is again repeated and the period of waiting is increased until the coagulation time is determined and the safety of the operative procedure is established.

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- Chronic Nontuberculous Basal Infections of Lungs. L. Hamman, Baltimore.—p. 363.
Laryngeal Changes in Acute Hematogenous Tuberculosis. W. H. Oatway Jr., Madison, Wis.—p. 378.
Thoracoscopy: Conservative Measure in Artificial Pneumothorax. C. G. Scarborough, San Jose, Calif.—p. 389.
Evolution of Modern Pneumothorax Machines: I. Hydrostatic and Bellows Type Machines. L. R. Davidson, Staten Island, N. Y.—p. 403.
Industry's Practice in Employment of Ex-Patients. E. Hochhauser, New York.—p. 427.
Tuberculosis Survey in Vermont. L. Rabinowitz, E. J. Rogers, Pittsford, Vt., and H. W. Slocum, Burlington, Vt.—p. 435.
*Tuberculosis in Nurses: Seven Year Study at Cook County Hospital. P. S. Rhoads, M. E. Afremow and Elizabeth C. Straus, with assistance of Dorothy L. Campbell, Chicago.—p. 444.
Sulfanilamide in Tuberculosis: Explanation of Certain Findings. H. J. Corper, M. L. Cohn and C. Bower, Denver.—p. 452.

Tuberculosis in Nurses.—According to Rhoads and his associates, from 1930 to 1937 inclusive fifty-two cases of tuberculosis were found in a group of 991 nurses. Ten of these were found within three months of the time the nurses came to Cook County Hospital, so that undoubtedly the nurses were already infected at the time they went on duty. Only one had a routine physical examination and roentgenogram of the chest on entrance to training at the hospital, when the tuberculosis was discovered. All the others presented satisfactory certificates of physical examination made just before their entrance. The need for roentgenograms of the chest was thus amply demonstrated. Particularly interesting was the fact that five affiliate nurses, who supposedly had been under supervision at their own hospitals up to the time they came to Cook County Hospital for training, were found to have active tuberculosis. Comparison of tuberculosis in nurses of Cook County Hospital with other groups of nurses and medical students shows that the incidence is about the same. Tuberculin testing at the Cook County Hospital has been done as a matter of routine only on the student groups and follow-up testing only for the past two years. In the relatively small group retested at the end of two years of training 62 per cent of those who originally had negative reactions to the Mantoux test now had positive reactions. Of the 778 graduates and permanent staff nurses tested after this survey was begun, 93.4 per cent were found to have positive reactions. In all likelihood tests on students at the end of three years would give comparable results. At the Cook County Hospital all students and many affiliates and graduates are required to take the regular tuberculosis service of three months. There is also exposure to active tuberculosis in the medical wards and orthopedic wards and in the children's hospital. The incidence of positive reactors among entering students is practically identical with that in other similar age groups in the general population. A striking feature of the present study is the high incidence of a family history of tuberculosis among those nurses in whom active disease developed (34.6 per cent of the group

contracting active tuberculosis as compared with 4.7 per cent of 500 healthy nurses chosen at random from equal groups of students, affiliates, postgraduates and graduates); 23.1 per cent of those with active involvement had been on duty in wards of the tuberculosis hospital. Nearly half of the nurses with active infections who reported for examination did so because of loss of weight, indicating the value of monthly weight records for all nurses. Other symptoms were cough, fatigue, thoracic pain and fever. The nine instances in which there were no complaints but the infection was discovered only by roentgenograms of the chest seem to justify the considerable expense required for roentgenograms of the chests of all students and all positive reactors to the Mantoux test in the other groups. This examination is now being made. After consideration of these data a program for preventing tuberculosis among nurses at the Cook County Hospital, similar to that originally suggested by Myers (1938), has gone into effect.

Archives of Pathology, Chicago

28: 613-776 (Nov.) 1939

- *Studies in Lipid Pneumonia: I. Lipid Pneumonia Due to Cod Liver Oil; II. Lipid Pneumonia Due to Liquid Petrolatum. I. Graef, New York.—p. 613.
Fat Excretion Through the Kidneys: Experimental Study. C. S. Scuderi, Chicago.—p. 668.
Etiology of Hypertension Resulting from Coarctation of Aorta. R. J. Brothner, Minot, N. D.—p. 676.
Histologic Changes Following Vascular Spasm in Central Nervous System (Pitressin Episodes). A. J. Nedzel, Chicago.—p. 697.
Accepted and Disputed Concepts in Pathology of Pulmonary Tuberculosis. E. R. Long, Philadelphia.—p. 719.

Studies in Lipid Pneumonia.—According to Graef, during the last five years twenty-two cases of lipid pneumonia have been studied at Bellevue Hospital. Differential histochemical studies of the lipid were made in each case; in seven instances these studies were supplemented by chemical analysis, which corroborated the conclusions drawn from the microscopic observations. A study of the pneumonic lesions in fifteen cases revealed the presence of intracellular lipid considered to be liquid petrolatum. The earliest response to the aspiration of this oil is an outpouring of macrophages, which engulf the finely emulsified oil and accumulate in the alveoli. The aspiration of the oil may be associated with pyogenic infection. In infants it may lead to asphyxial pneumonia. Macroscopic lesions varied from small pseudotuberculous fibrous scars to lobar consolidation resembling gray hepatization of the lung. Microscopic lesions varied from an acute macrophagic response to dense proliferative scars with imprisoned globules of oil. Walsh and Cannon recommended the discontinuance of oils as vehicles for all nasopharyngeal medicaments on the evidence that drugs dissolved in oil act less effectively than those dissolved in isotonic saline solution. The manufacturers of oily "nose drops" should set a limit to the capacity of the droppers. The doses for infants and adults should be so adjusted as to prevent accumulation and free flow into the nasopharynx. With the present droppers from 3 to 6 cc. of liquid petrolatum may be introduced into the nares of small infants by unsuspecting parents, nurses or physicians. Adequate warning should be given the public against overdosage with any intranasal medication. The use of liquid petrolatum as a lubricant or therapeutic agent in the larynx and trachea should be stopped, in view of the difficulty of removing this lipid from the lung. The damage caused by the accumulation of even small amounts administered repeatedly over a long period is sufficiently great to warrant the replacement of this oil by other less irritating and more readily removed lipids. There is always the added danger of aspiration of other agents—bacteria, spores or fungi—with any nasopharyngeal liquid.

Archives of Physical Therapy, Chicago

20: 593-656 (Oct.) 1939

- Report of Committee on Radio Interference by High Frequency Currents. J. S. Coulter, Chicago; W. Bierman and K. G. Hanson, New York.—p. 598.
Further Development of Physical Therapy. W. H. Schmidt, Philadelphia.—p. 605.
Present Status of Education in Physical Therapy. O. N. Andersen, Chicago.—p. 609.
Fever Therapy Technic in Syphilis and Gonococcal Infections. H. W. Kendall, D. L. Rose and W. M. Simpson, Dayton, Ohio.—p. 614.
Combined Artificial Fever and Chemotherapy in Dementia Paralytica: Preliminary Report of Seventy Cases. A. E. Bennett, Omaha; J. C. Nielsen, Hastings, Neb.; A. H. Fechner, Lincoln, Neb., and P. T. Cash, Omaha.—p. 620.

Delaware State Medical Journal, Wilmington

11: 211-230 (Oct.) 1939

What Price Depression. R. Sleyster, Wauwatosa, Wis.—p. 211.
Technic of Elective Cesarean Section Under Local Anesthesia. E. A. Schumann, Philadelphia.—p. 219.

Georgia Medical Association Journal, Atlanta

28: 387-428 (Oct.) 1939

Georgia Menaced by Cancer. J. L. Campbell, Atlanta.—p. 387.
External Ear Diseases, Particular Reference to Fungoid Type: Preliminary Report. B. H. Minchew, B. E. Collins and M. M. Harris, Waycross.—p. 408.
Treatment of Malaria. J. A. Redfearn, Albany.—p. 412.

Journal of Thoracic Surgery, St. Louis

9: 1-118 (Oct.) 1939

Demonstration of Cervicomedial Continuity with Comments on Extrapleural Extension of Mediastinal Abscess. E. E. Jemerin and H. Neuhoof, New York.—p. 1.
*Cervicomedial Abscess Due to Nonperforative Trauma to Esophagus. E. E. Jemerin and L. L. Coleman, New York.—p. 11.
Pneumectomy for Malignant and Suppurative Disease of Lung. R. H. Overholt, Boston.—p. 17.
*Foreign Bodies in Heart and Pericardium—Should They Be Removed? H. R. Decker, Pittsburgh.—p. 62.
Ligation of Left Main Hilus for Bronchiectasis with Survival of Lower Lobe. L. J. Leahy, Buffalo.—p. 80.
Bronchoscopic Mirror for Upper Lobe Visualization. P. W. Gebauer, Cleveland.—p. 89.
Acute Empyema with Brucella Abortus as Primary Causative Agent: Case Report. R. H. Macdonald, Saskatoon, Sask.—p. 92.
Thoracoplasty Retractor Harness. H. B. Hall, Minneapolis.—p. 94.
Trans thoracic Phrenic Nerve Interruption. A. D. Crecca, Verona, N. J.—p. 97.
Stab Wound of Heart with Coronary Ligation. C. B. Olim and J. D. Hughes, Memphis, Tenn.—p. 99.
Stab Wound of Pulmonary Vein. J. C. Whitaker, New York.—p. 106.
Tubercleuloma of Lung: Case Report. C. Haight and J. M. Farris, Ann Arbor, Mich.—p. 108.

Cervicomedial Abscess and Esophageal Trauma.

—Jemerin and Coleman report two instances of the formation of periesophageal cervicomedial abscess following nonperforative instrumental trauma to the esophagus. No actual perforation of the viscous occurred. The trauma was insignificant and might occur at any well conducted esophagoscopy examination. Therefore these cases indicate that this complication should be watched for after any esophagoscopy, no matter how easily executed, if pain, dysphagia or fever follows the passage of the instrument. The authors believe that the sequence of events in their cases, in the absence of any demonstrable perforation, was probably as follows: Some degree of trauma to the esophagus took place during esophagoscopy, possibly with mucosal stripping and devitalization of the underlying esophageal wall by pressure. The devitalized tissue comprised a favorable nidus for anaerobic infection. Localized esophagitis in this area then occurred, spreading through it to the contiguous periesophageal tissue. The pathogenesis of this condition could be compared with that of peritonitis by seepage occurring from a diseased, inflamed intestine without any actual perforation. In one case it was not until this seepage of infection through the esophagus had already occurred that the process in the esophageal wall progressed to actual necrosis and perforation. This was shown by the time of appearance of methylene blue. In the other case, although a periesophageal suppuration was set up promptly, complete necrosis of the esophageal wall did not occur. Small loculations of air in the periesophageal tissue were observed in the roentgenograms taken prior to operation. This observation, ordinarily considered pathognomonic of esophageal perforation, was in these instances apparently due to the formation of gas by anaerobic bacteria.

Foreign Bodies in Heart and Pericardium.—Decker reviews the results in 100 cases of foreign bodies retained in the heart and pericardium from which he attempts to indicate whether the bodies should or should not be removed, whether the results justify their removal and also when the operation should be performed. There were eight deaths following forty-seven operations (17 per cent) as opposed to sixteen deaths among the fifty-three persons not operated on (30 per cent). When these figures are compared with statistics gathered by other investigators, the same average postoperative mortality but a much higher nonoperative mortality is observed. Of the sixteen deaths of patients not operated on six were due to bacteremia or to shock and hemorrhage from associated injuries,

causes not specifically the result of cardiac damage from the foreign body. From their own results and the statistics of other investigators the authors conclude that one cannot argue with too much certainty for or against operation. However, it is possibly justifiable to make the following deductions: 1. It is relatively safe to remove foreign bodies from the pericardium. 2. It is relatively dangerous to allow sharp foreign bodies to remain in the heart because of their tendency to cause fatal perforation later. 3. It is relatively dangerous to leave foreign bodies free in the right heart owing to the risk of pulmonary embolism and infarction. 4. Large foreign bodies in the pericardium lead to a fatal issue and should be removed as early as practicable. 5. If, in the course of an operation to remove a foreign body, unfavorable cardiac symptoms develop, it is wise to delay. The course of events should be the guide as to whether or not operation should be performed later. 6. Foreign intramural fixed bodies usually do not cause death, nor do they shorten life. The conclusion appears to be that foreign bodies should not be removed simply because of their presence. No emergency exists among patients who survive the original trauma, unless one chooses to consider that free cavity bodies, sharp needle-like bodies and large objects need immediate or early surgical intervention. According to Matas, indications for removal cannot be formulated by mere statistics. They must be based on individual prognosis, the condition of the patient and the degree and duration of the disability.

Maine Medical Association Journal, Portland

30: 279-310 (Nov.) 1939

Chemotherapy of Pneumonia. F. G. Blake, New Haven, Conn.—p. 279.
General Management of the Injured. J. J. Moorhead, New York.—p. 290.
Urologic Diagnosis. R. L. Huntress, Portland.—p. 295.

Michigan State Medical Society Journal, Lansing

38: 925-1020 (Nov.) 1939

Certain Symptoms Common to the Nose, Explained on Physiologic Basis. H. I. Lillie, Rochester, Minn.—p. 939.
Cycloplegics. G. H. Mehney, Grand Rapids.—p. 947.
Our Guild. B. R. Corbus, Grand Rapids.—p. 948.
*Treatment of Paroxysmal Hiccup with Benzedrine Sulfate Inhalation. H. A. Hanelin, Marquette.—p. 951.

Amphetamine Sulfate Inhalation for Hiccup.—Not having any benzedrine sulfate tablets available, Hanelin asked a patient with paroxysmal hiccup of five hours' duration to inhale (once in each nostril) the volatile preparation of amphetamine sulfate. Relief from hiccups was instantaneous and without recurrence. He reports two similar cases (one following an operation) in which an inhalation of amphetamine sulfate resulted in complete abatement of the symptoms. The inhalation of amphetamine sulfate in the treatment of paroxysmal hiccup due to the usual systemic reaction, the author states, coincidentally stimulates the sympathetic nerve fibers of the gastrointestinal tract (through the thoracolumbar chain of sympathetics with subsequent stimulation) and releases the smooth muscle spasm possibly due to excessive vagus stimulation.

Nebraska State Medical Journal, Lincoln

24: 361-400 (Oct.) 1939

Osteomyelitis in Children. A. R. Shands Jr., Wilmington, Del.—p. 361.
Treatment of Compound Fractures. J. A. Key, St. Louis.—p. 367.
The Urologist Turns to Medicine. G. Carroll, St. Louis.—p. 375.
Dagenan and Pneumonia. J. C. Nielsen and L. R. Nash, Ingleside.—p. 378.
Aleukemic Myelosis and Pernicious Anemia. A. S. Rubnitz, Omaha.—p. 381.
Physiology and Therapy of Menopause. C. S. Moran, Omaha.—p. 386.
Acrodynia. H. M. Jahr and R. C. Dornberger, Omaha.—p. 391.

New England Journal of Medicine, Boston

221: 679-720 (Nov. 2) 1939

The Care of the Patient. D. Guthrie, Sayre, Pa.—p. 679.
*Effect of Kitchen Procedures on Vitamin C Content of Fruit Juices. T. H. Ingalls, Brookline, Mass.—p. 683.
Congenital Posterior Urethral Valve Causing Renal Rickets: Report of Case. H. A. Derow and M. L. Brodny, Boston.—p. 685.
Alcoholism and Attempted Suicide: Report of 143 Cases. M. Moore, Boston.—p. 691.
Obstetrics: Labor and Delivery. J. Rock, Brookline, Mass.—p. 694.

Effect of Kitchen Procedures on Vitamin C in Fruit Juices.—Ingalls says that since the isolation and synthesis of ascorbic acid it has been shown that it is readily oxidized in alkaline solutions and is relatively stable in acids. Heating

tends to increase the rate of oxidation, as does copper acting as a catalyst. When oxidation proceeds at a slow rate, the time factor becomes of added importance. Thus, although fresh cow's milk has an appreciable ascorbic acid content, too much of the vitamin is oxidized during milking, pasteurization and marketing to make that food a reliable antiscorbutic agent. The breast-fed infant is amply protected, since he contends neither with catalysts nor with time. It is apparent that it is not only the high vitamin content of citrus fruits but the protective acidity of the juice which makes them so efficacious as antiscorbutic foods, and so these substances have become a routine part of the diet of the artificially fed infant. Oxidation of ascorbic acid in orange, tomato and pineapple juices proceeds so slowly at ice box temperatures that the greater part of their vitamin C potency is retained after one or two days' refrigeration. The longer they stand, however, the greater is the destruction of the vitamin. Although the rate of oxidation is materially increased at room temperatures and greatly increased by boiling, it is not enough to necessitate particular caution in the ordinary kitchen handling and preparation of these juices. In his approximation of prophylactic doses the clinician can consider 50 cc. of orange juice (containing 25 mg. of ascorbic acid) as a nutritional unit equivalent to 150 cc. of tomato juice or 250 cc. of pineapple juice.

New Orleans Medical and Surgical Journal

92: 235-288 (Nov.) 1939

- Carcinoma of Uterus. J. C. Masson, Rochester, Minn.—p. 235.
Tuberculin Testing in Public Schools. J. L. Wilson, New Orleans.—p. 244.
Roentgen Ray in Early Diagnosis of Pulmonary Tuberculosis. L. J. Menville, New Orleans.—p. 247.
Value of Early Diagnosis in Pulmonary Tuberculosis. E. Hull, New Orleans.—p. 249.
Mortality of Thyroid Disease in Nonendemic Area: Analysis of 103 Consecutive Deaths, with Special Note on Liver Factor. F. F. Royce, New Orleans.—p. 254.
Peritendinitis Calcarea. S. M. Copland and M. Michel, New Orleans.—p. 261.
Schistosomiasis: Report of Case. G. H. Hauser, New Orleans.—p. 265.
Primary Syphilis in an 89 Year Old Man: Report of Case. J. W. Tedder, New Orleans.—p. 270.

Public Health Reports, Washington, D. C.

54: 1877-1910 (Oct. 20) 1939

- Disabling Morbidity Among Industrial Workers, Second Quarter and First Half of 1939. W. M. Gafafer.—p. 1878.
Studies in Chemotherapy: X. Colorimetric Tests for Aromatic Hydroxylamines and for Further Oxidation Products of Aromatic Amines: Their Demonstration in Urine Following Sulfanilamide Administration. S. M. Rosenthal and H. Bauer.—p. 1880.

54: 1911-1964 (Oct. 27) 1939

- *Recovery of Virus of Poliomyelitis from Stools of Healthy Contacts in Institutional Outbreak. S. D. Kramer, A. G. Gilliam and J. G. Molner.—p. 1914.

Poliomyelitis Virus in Stools of Healthy Contacts.—

During an epidemic of poliomyelitis in a children's home Kramer and his associates isolated the poliomyelitis virus from well persons. At the time of the outbreak, thirty-four children were cared for in the home. Fourteen of these were of school age (from 5 to 16 years) and were permitted considerable freedom within the home and in its immediate neighborhood. The remaining twenty children were of infant and preschool ages; they were kept in an entirely separate wing of the institution and, with exceptions, had no direct contact with the older group. In addition to the regular residents of the home, approximately 250 neighborhood children used its facilities as a summer recreational center. Between Aug. 1 and 8, 1939, five cases of poliomyelitis, one fatal and the others nonparalytic, developed in the twenty infants and preschool children of the home. In these children a diagnosis of poliomyelitis was established from typical history, signs, symptoms and spinal fluid observations. Three additional children, for whom no definite diagnosis could be established, had fevers that lasted from twenty-four to forty-eight hours. Poliomyelitis virus was recovered from the stools of three out of twelve healthy children, contacts of these patients, and from two of the three children who had had noticeable fevers. Thus, including the five with clinical infections who were not examined for virus, ten of the twenty children harbored poliomyelitis virus at some time during the month of August. Virus was also recovered from the stool of the day nurse in charge of the infant and preschool group of children. Virus was again recovered from stools of two

children taken nineteen days after the first positive stools were obtained. Thus, counting from the date of onset of the first case (August 1) to the date of collection of the last positive stool (August 30), the minimal limit of time in which the virus might have been present in some member of the group was thirty days. Poliomyelitis did not occur in any child less than 1 year of age, but stools from three of five children in this age group yielded virus. In three of the five cases, including the one terminating fatally, poliomyelitis occurred in children with recent tonsillectomies and adenoidectomies. However, there were three other children with recent tonsillectomies and adenoidectomies in whom the disease failed to develop. The facts involved in this institutional outbreak are consistent with a theory of transfer of infection by direct personal contact. Although they do not constitute conclusive proof of this they do offer corroborative evidence that the virus of poliomyelitis is usually spread by healthy carriers. After July 23 the only contacts had by the group of infants and preschool children within the home were with seventeen adult attendants, nine of whom were present daily and eight of whom were present from one to three times a week. One child had been traveling with his mother by automobile in New York State from July 2 to 23. Poliomyelitis developed in this child on August 8. Only one adult attendant was known to have had any association with poliomyelitis outside the institution. This man, a third year medical student in temporary charge of the institution, had played ping-pong during the first week in July with an adult in whom fatal poliomyelitis developed July 20. However, poliomyelitis virus was not recovered from the stool collected from the medical student August 10. The preschool children played daily in a small playground enclosed by a wire fence, which in turn was surrounded by a large playground used by the older children in the home and the neighborhood children. Play between the older and younger children was forbidden, but candy and other materials were passed through the fence, and the older children occasionally used the preschool children's swings. There were four cases of poliomyelitis reported within a radius of about five blocks of the home. The dates of onset of illness in these cases were July 23 and August 8, 12 and 17. A survey of 137 homes, selected at random in the same area, revealed cases of suggestive illnesses having onsets early in August but no other cases which could be definitely called poliomyelitis. None of the fourteen older children at the home were reported as having poliomyelitis. Only two of the adult attendants had any illness of any character during the period of the epidemic. The medical student already referred to had a headache and vague pains in the neck and shoulder but no fever from August 10 to 13. The night nurse had headache, diarrhea, nausea and vomiting from August 14 to 19. Virus was not recovered from her stool specimen collected August 26.

Radiology, Syracuse, N. Y.

33: 421-550 (Oct.) 1939

- Fractures of Neck of Femur. L. H. Garland and H. A. Hill, San Francisco.—p. 421.
Estrogenic Mammary Cancer in the Rat. C. F. Geschickter, Baltimore.—p. 439.
Relative Degrees of Radiosensitivity of Tissue. J. F. Elward and J. F. Belair, Washington, D. C.—p. 450.
Motility of Gastrointestinal Tract in Man as Observed in Plane. G. A. Weltz, Munich, Germany.—p. 462.
Malignoma of Long Bones. M. J. Nemenor.—p. 465.
Effects by Means of Gas, Following Spontaneous. C. Gottlieb, New York.—p. 470.
Lymphogranuloma of Colon. R. A. Rendich and M. H. Poppel, New York.—p. 472.
Radiologic Evidence of Malignancy in Bone Tumors and Its Relation to Biopsy. J. F. Brailsford, Birmingham, England.—p. 476.
Teleroentgen Kymography: Its Application to Study of Heart Size, Output and Aortic Elasticity. H. E. Ungerleider and R. Gubner, New York.—p. 497.

Rhode Island Medical Journal, Providence

22: 175-188 (Nov.) 1939

- Obstructive Uropathy. A. Randall, Philadelphia.—p. 175.
*Bromide Intoxication. P. W. Preu, New Haven, Conn.—p. 179.

Bromide Intoxication.—Preu states that eighteen cases of severe bromide intoxication have been encountered in 2,000 consecutive admissions to the psychiatric inpatient service of the New Haven Hospital, with two deaths. It is evident, therefore,

that this condition is of considerable clinical importance and that it needs continued emphasis. The tendency of bromide to displace chloride and to accumulate in the tissues is the decisive factor in the production of intoxication. Dehydration and dietary deficiency are important contributing factors. Treatment of the intoxication depends on the administration of adequate amounts of fluids and chloride. Bromide should rarely be used in medical practice and never without the continuous supervision of a physician. The drug should not be given for more than a few days at a time unless the blood bromide level is determined and controlled. Its administration is clearly indicated only in the treatment of epileptic patients when phenobarbital and dilantin sodium in adequate dosage have failed to control the seizures. Psychologic treatment, not drugs, is indicated in mild tensional conditions and insomnia. If drugs must be used temporarily, barbiturates are more effective than bromide. Bromide has no place in the treatment of depression. Paraldehyde is to be preferred to bromide in the treatment of severe excitement, since bromide is ineffective unless dangerously large doses are given. Bromide should be used with caution in cases of arteriosclerosis, since delirium is readily produced if cerebral arteriosclerosis is present. Nephritis is a definite contraindication to the use of the drug. Bromide should not be used in cases of dehydration or severe malnutrition in which the body fluids and chlorides are low. The patient should be warned against the purchase of bromide in a drugstore without a prescription, and its sale without a prescription should be prohibited. All prescriptions for it should be marked "not to be refilled."

South Carolina Medical Assn. Journal, Greenville

35: 269-296 (Nov.) 1939

- The National Health Program. A. T. McCormack, Louisville, Ky.—p. 269.
Present Knowledge of Prophylaxis and Treatment of Tetanus. E. B. Saye, Spartanburg.—p. 275.
Cecostomy in Treatment of Cases of Advanced Appendicitis: Report of Twenty-Eight Cases. W. H. Prioleau, Charleston.—p. 280.
Influenzal Meningitis Treated with Sulfapyridine: Report of Two Cases with Recovery. J. I. Waring, Charleston.—p. 284.

Surgery, Gynecology and Obstetrics, Chicago

69: 577-704 (Nov.) 1939. Partial Index

- Endometriosis of Lungs: Experimental Production of Endometrial Transplants in Lungs of Rabbits. J. E. Hobbs and A. R. Bortnick, St. Louis.—p. 577.
*Effect of Obstetric Anesthesia on Oxygenation of Maternal and Fetal Blood, with Particular Reference to Cyclopropane. C. A. Smith, Boston.—p. 584.
Mercuric Chloride, Potassium Mercuric Iodide and Harrington's Solution in Skin Disinfection: Behavior and Uses. P. B. Price, Baltimore.—p. 594.
Maintenance of Life During Experimental Occlusion of Pulmonary Artery Followed by Survival. J. H. Gibbon Jr., Philadelphia.—p. 602.
*Thirty-Three Pregnancies in Diabetic Women. W. F. Mengert and K. A. Laughlin, Iowa City.—p. 615.
Congenital Bowing and Pseudarthrosis of Lower Leg: Manifestations of von Recklinghausen's Neurofibromatosis. C. G. Barber, Cleveland.—p. 618.
*Sulfanilamide Therapy in Severe Puerperal Infection. C. A. Gordon and A. H. Rosenthal, Brooklyn.—p. 631.
McClure-Aldrich Test in Water Balance Following Operation. H. C. Hopps, Chicago, and F. Christopher, Evanston, Ill.—p. 637.
Significance of Radiation Reaction in Carcinoma of Cervix Uteri. S. Warren, J. V. Meigs, A. O. Severance and H. L. Jaffe, Boston.—p. 645.
Multiple Myeloma. R. K. Ghormley and G. A. Pollock, Rochester, Minn.—p. 648.
Operative Technic for Treatment of Vesicovaginal and Uterovaginal Fistulas. W. W. Scott and K. M. Wilson, Rochester, N. Y.—p. 663.
Acute Perforated Peptic Ulcer: Simple Closure Through a Short Transverse Incision. J. B. Hartzell and M. E. Sorock, Detroit.—p. 669.
Problems in Differential Diagnosis Between Urologic and Abdominal Lesions. H. L. Kretschmer, Chicago.—p. 671.
Inguinal Hernia: Application of Cardinal Principles in Repair of Inguinal Hernias. R. L. Ramos and C. C. Burton, Dayton, Ohio.—p. 688.

Obstetric Anesthesia and Oxygenation of Blood.

Smith attempted to correlate the degree of oxygenation of maternal and fetal blood with the type of anesthetic used and to discover the relationship between fetal anoxemia and the presence or absence of apnea in the newborn infant. He concluded that: 1. Oxygenation of maternal blood during labor but before delivery and anesthesia was comparable to that observed by other authors for maternal blood at delivery without anesthesia. The arterial blood during labor showed slight anoxemia. 2. Specimens of fetal blood at the moment of birth showed wide variations in oxygen content, presumably because of anatomic and other uncontrollable circumstances. As a rule the fetal blood at birth, even on the arterial side,

was considerably deficient in oxygen. 3. In general, ether anesthesia definitely increased the oxygen capacity of maternal blood, and under this anesthesia fetal oxygenation appeared to be satisfactory. 4. Nitrous oxide, administered with at least 20 per cent of oxygen, produced definite maternal and fetal anoxemia. 5. Under cyclopropane, oxygenation of the maternal blood was elevated in both the arterial and the venous specimens. This phenomenon is probably not due to the high concentration of oxygen administered with cyclopropane. The blood of infants delivered under this agent was somewhat better oxygenated than those born under nitrous oxide-oxygen anesthesia. It contained less oxygen than the blood of infants delivered under ether or that reported in the literature for those delivered without obstetric anesthesia. 6. Pronounced anoxemia in the fetal blood at birth was not constantly accompanied by apnea of the newborn except in infants delivered under nitrous oxide-oxygen anesthesia. 7. Cyclopropane was present in the fetal blood in almost as high concentration as in the maternal blood. Only about half as much nitrous oxide was found in the fetal as in the maternal blood. 8. Judged by biochemical data, cyclopropane as an obstetric anesthetic appears to be perhaps less safe for the infant than the clinical appearance of the mother would indicate.

Pregnancy and Diabetes.—During a period of twelve years Mengert and Laughlin observed thirty-three pregnancies in twenty-eight diabetic women; these were encountered in a total of 9,105 deliveries, with an incidence of 1:276. These patients were managed conservatively, and concern was directed toward the diabetes rather than the pregnancy. A controlled diabetic woman who becomes pregnant is, obstetrically speaking, a normal woman. With this principle as a guide, the author did not induce labor or intervene surgically merely because the patient had diabetes. The usual rules of conservative obstetrics were followed, and intervention was instituted only for obstetric reasons accepted for the nondiabetic pregnant woman. Cesarean section prior to term is being used widely. The authors contend that when it is done on the diabetic pregnant woman the indication must be viewed as fetal and not as maternal. Priscilla White is especially emphatic in her belief that cesarean section is indicated. In her series of sixty-six personally observed cases there was a fetal salvage of 89 per cent, which the authors compare with the fetal survival rate of 81.8 per cent in their series under conservative management. Assuming that the four stillborn babies in this series might have been saved by abdominal delivery, although one of them weighed but 1,750 Gm., thirty-two otherwise unindicated cesarean sections would have been performed. This seems a prohibitive price to pay for four babies, especially after Plass and others have repeatedly called attention to the fact that cesarean section does not in itself conserve fetal life. On the contrary, the fetal mortality rate from cesarean section alone ranges between 8 and 16 per cent.

Sulfanilamide Therapy in Severe Puerperal Infection.

—Gordon and Rosenthal gave sulfanilamide to 118 patients with severe puerperal infections of the genital tract. The usual predisposing factors are not discussed, but there were five patients with acute respiratory infection, one with suppurating paronychia, six with peritonitis and four with thrombophlebitis. In the septic abortion group there were twenty patients with abdominal tenderness, in eleven of whom there was evidence of peritonitis. Chills were observed in ten, and pelvic masses were prominent in eight. Two of the five deaths occurred in this group. Of the entire series, the clinical response to sulfanilamide therapy was good in forty-five and doubtful in forty-five, and there was no effect in twenty-three. The authors conclude that in mild cases of puerperal infection sulfanilamide is not indicated. Intrapartum infections should be treated with sulfanilamide at once. Optimal benefit may be expected with spaced maintenance doses of from 20 to 30 grains (1.3 to 2 Gm.) of sulfanilamide and moderate restriction of fluid, provided a large initial dose has been given the patient. In severe puerperal infections of the genital tract, whatever their etiology, sulfanilamide may be and should be used, provided the patient is in a hospital where its administration can be controlled. Daily blood counts for at least the first five days are essential.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

1: 269-364 (Oct.) 1939

- *Effect of Potassium on the Heart in Man. W. A. R. Thomson.—p. 269.
 Etiology of Lung Infarction. T. H. Belt.—p. 283.
 *Herpes Zoster and Angina Pectoris. J. D. Spillane and P. D. White.—p. 291.
 Sex and Age Factors in Acute and Chronic Valvular Disease. H. L. Sheehan and A. M. Sutherland.—p. 303.
 Stenosis at Lower Bulbar Orifice of Infundibulum. H. W. Dryerre and R. Walmsley.—p. 325.
 Volumetric Reconstruction of Heart in Health and in Disease: Radiologic Study. J. D. Spillane.—p. 333.
 Kinked Carotid Artery That Simulates Aneurysm. J. Parkinson, D. E. Bedford and S. Almond.—p. 345.

Effect of Potassium on Heart.—The observation of certain changes in the electrocardiograms from patients who were receiving potassium salts induced Thomson to carry out a more careful study of the effects of such salts on the heart in man, not only to gain some information as to possible dangers in their therapeutic application, but also in an attempt to throw some light on their function in the etiology of certain disorders of the heart. A study has been made of the effect of potassium salts on the heart of twenty-four persons with various diseases. Potassium was given by mouth in the form of the citrate and the chloride, the usual dosage in the case of both salts being 5 Gm. three times a day at 8:30 a. m., 1:30 p. m. and 7 p. m., but several patients were given smaller amounts. Blood for the estimation of the serum cations was taken at noon. Electrocardiograms were almost all taken at the same time of day—shortly before the midday meal—with the patient in bed, and every care was taken to ensure that the standardization was uniform. In all instances they were taken both before and during the administration of potassium, and generally at least one was taken a week after it had been stopped. In fourteen of twenty-four cases the administration of potassium salts was followed by an increase in the height of the T wave in one or more leads. No correlation was found between the increase in the height of the T wave on the one hand and the amount of potassium given or the increase in the concentration of the serum potassium on the other, except that in the fourteen cases that showed this change the average increase in the level of the serum potassium was 8.3 mg. per hundred cubic centimeters, compared with 2.6 mg. per hundred cubic centimeters in the cases that showed no such change. In one case the T wave, which was diphasic in all leads before the administration of potassium salts, became more deeply diphasic while they were being given. In two cases definite degrees of heart block were produced by the administration of potassium salts. In one there was prolongation of the PR interval, while in the other sino-auricular block and nodal rhythm resulted with marked slowing and irregularity of the heart rate. The author discusses the similarity of these changes to those produced by vagal stimulation, by acetylcholine and by pitressin and advances the hypothesis that in each case they may be mediated through the action of the potassium ion on the myocardium. Regarding the clinical significance of this work, the author says that potassium salts, particularly in the form of the citrate, have long enjoyed a reputation as diuretics both in renal and in cardiac edema. The general assumption has been that large doses of potassium salts by mouth are not toxic on account of the rapidity with which they are excreted in the urine. That this is not always the case, however, is shown by the figures in the reported cases, and particularly is this so in chronic nephritis, the group in which potassium salts are usually administered as diuretics. In view of the marked disturbances which can be produced by the ingestion of potassium salts by mouth, their administration in cases of cardiovascular disease would seem to be contraindicated, or at least they should be given only in small doses.

Herpes Zoster and Angina Pectoris.—Spillane and White encountered twelve instances of herpes zoster in a series of 350 cases of angina pectoris. In ten instances the zoster appeared after the anginal attacks had become established, while in two the zoster preceded the angina. In the latter (cases 11 and 12)

the zoster first appeared before the first anginal paroxysm. In case 11 the subsequent anginal pain involved the right shoulder and arm, where the zoster rash had appeared two and a half years before. In case 12 there were recurrent attacks of herpes zoster over the left chest in the eighteen months preceding the first anginal attack. In the remaining ten cases the anginal pains had been experienced first, in all but one for several years, and in the majority they were severe and frequent. The majority of patients were elderly, eight being over 60 years of age. All suffered from true angina of effort, relieved by nitrites, except one who had a syphilitic aneurysm of the ascending limb of the arch of the aorta. Electrocardiograms, taken in six cases, all showed evidence of coronary insufficiency. The distributions of the referred cardiac pain and herpetic eruption are outlined in diagrams. A fairly close segmental relationship is apparent between the two areas. After giving brief histories of the twelve cases, the authors raise the question whether the occurrence of herpes zoster in anginal subjects is fortuitous or whether it reflects some change in the posterior root ganglions. Having sifted the available evidence, they lean to the latter explanation and suggest that the zoster is a trophic manifestation of continued irritation of the posterior root ganglions by impulses from the diseased viscus. The evidence is marshaled as follows: 1. The similarity between the relative areas of distribution of the referred cardiac pain and the herpetic rash is so striking in several instances that coincidence seems highly improbable. 2. Several reports have been published of the appearance of herpes zoster over the distribution of referred pain in other disease conditions, such as biliary colic, renal colic, abdominal colic, pleurisy, pericarditis, appendicitis and arthritis. 3. The authors' contention gains support when it is recalled that other cutaneous lesions have been observed along the line of radiation of pain in angina pectoris. They suggest that repeated bombardment of spinal root ganglions by afferent impulses from the ischemic heart gives rise to antidromic impulses that lead to vasodilatation and blister formation in referred cutaneous areas. The herpetic eruption is thus a trophic manifestation of disease of the coronary vessels in these cases.

British Medical Journal, London

2: 897-938 (Nov. 4) 1939

- *Closed Intrapleural Pneumolysis. P. W. Edwards and A. Lynn.—p. 897.
 Laboratory Methods in Diagnosis and Control of Fevers of Enteric Group. J. S. K. Boyd.—p. 902.
 Cancer: Consideration of Curability and Role of Radiotherapy in Treatment. R. Paterson.—p. 904.
 Complications of Gastric Ulcer: Description of Case. J. A. Martinez.—p. 907.
 Use of Stored Blood for Transfusion: Interim Report. J. L. Hamilton-Paterson.—p. 908.

Closed Intrapleural Pneumolysis.—Edwards and Lynn report the results of 260 internal pneumolyses in an unselected series of 235 cases of pulmonary tuberculosis undergoing treatment by artificial pneumothorax. The indication for the operation was the presence of adhesions over the diseased area of lung, and in most cases these were associated with uncollapsed cavities. All adhesions were completely divided in 34 per cent of pneumothoraces and the x-ray examination of these showed a satisfactory collapse in 71 per cent. Only partial division of adhesions was possible in 55 per cent and roentgenologically 28 per cent of these showed a satisfactory collapse. The remaining 11 per cent were inoperable. After partial cauterization it has been found that the position of the remaining adhesions and their relation to cavities have an influence on the efficiency of the collapse. In some positions adhesions are more likely to interfere with efficient collapse than in others. When the apex of the lung has dropped below the clavicle, medial subapical adhesions do not prevent the closure of cavities in the upper lobe. Such adhesions may be left undivided unless they can be dealt with easily and safely. They may be left, if access is difficult, when a cavity well below the clavicle is held by lateral adhesions that can be cauterized. An apical symphysis is usually inoperable, though parts of such adhesions are sometimes divisible. This, however, does not lead to any obvious improvement and may result in the weakening of the walls of an adjacent cavity with perforation of the lung. Cauterization of lateral adhesions in the presence of an apical symphysis has no effect on apical

cavities but may result in closure of cavities below the level of the clavicle. Apart from effusions there were few complications, though the percentage of perforation of the lung was 2.3. Varying degrees of surgical emphysema occurred in many cases, and in six it was severe, extending to the neck and abdominal wall. Apart from discomfort to the patient, no ill effects resulted. Mediastinal emphysema was not observed. Pleural effusion (32 per cent) was the most frequent complication; transient effusions followed the operation in 8 per cent and persistent effusions in 24 per cent, more than half of which contained tubercle bacilli. Persistent effusions, especially those containing tubercle bacilli, had a definitely adverse effect on the result of the operation, frequently resulting in partial symphysis or obliteration of the pneumothorax. Persistent effusions were much more common in far advanced cases. Tuberculous effusions were also more frequent in cases in which any degree of pyrexia or a rapid sedimentation rate was present or in those in which an extensive cauterization was performed. In dealing with such cases, therefore, the possible advantages of the operation should be carefully weighed against the much greater liability to effusions. X-ray diagnosis of an inoperable apical symphysis was confirmed by thoracoscopy in forty-six cases. Apart from this group, x-ray examination was unreliable in determining the position or extent of the adhesions present. Stereoscopic examination was more reliable than fluoroscopy and anteroposterior roentgenograms but was not of enough value to warrant routine use.

Journal of Laryngology and Otology, London

54: 611-648 (Oct.) 1939

- Nontraumatic Ventilation Treatment of Nose and Sinuses. S. N. Parkinson.—p. 611.
Assending Fibrosis of Esophagus and Its Relation to Presence of Islets of Gastric Mucosa. A. B. Kelly.—p. 621.

Journal of Neurology and Psychiatry, London

2: 285-386 (Oct.) 1939

- Factors in Functional Recovery Following Section of Oculomotor Nerve in Monkeys. M. B. Bender and J. F. Fulton.—p. 285.
*Familial Presenile Dementia: Report of Case with Clinical and Pathologic Features of Alzheimer's Disease. W. H. McMenemy, C. Worster-Drought, J. Flind and H. G. Williams.—p. 293.
Arhinencephaly. R. M. Stewart.—p. 303.
Functional Responses of Sympathetic Nervous System of Man Following Hemidecortication. D. J. Williams and J. W. Scott.—p. 313.
Swayback: Demyelinating Disease of Lambs with Affinities to Schilder's Encephalitis and Its Prevention by Copper. J. R. M. Innes.—p. 323.
Vitamin B Deficiency and Nervous Disease. C. D. Aring and T. D. Spies.—p. 335.

Familial Presenile Dementia.—McMenemy and his co-workers present a case of Alzheimer's disease with typical clinical and histologic observations. Investigation of the family history revealed the fact that three of four siblings of the previous generation, including their patient's father, suffered from a presenile dementia, which in all probability was identical with that of the patient. As in the case of familial Alzheimer's disease described by Lowenberg and Waggoner, the parents of the first affected generation were cousins.

Journal of Pathology and Bacteriology, Edinburgh

49: 273-456 (Sept.) 1939. Partial Index

- Experimental Production of Nephritis in Rats by Means of Parathyroid Hormone and of Vitamin D. B. Chown, Margaret Lee, J. Teal and R. Currie.—p. 273.
Some Effects of Administration of Estrogens on Organs of Castrated and Noncastrated Male Rats Partially Deprived of Vitamin A. E. M. Hume, R. Burbank and V. Korenchevsky.—p. 291.
Further Observations on Paget's Disease of the Nipple. R. Muir.—p. 299.
Corynebacterium Pyogenes Antitoxin Content of Animal Serums. R. Lovell.—p. 329.
Autoplastic Splenic Grafts: Their Use in Study of Growth of Splenic Tissue. R. M. Calder.—p. 351.
Observations on Musculature of Lung in Children. S. Engel and G. H. Newns.—p. 381.
*Infections with Bacterium Enteritidis in Infancy with Triad of Enteritis, Cholecystitis and Meningitis. Katharine J. Guthrie and G. L. Montgomery.—p. 393.
Effect of Passive Immunization on Experimental Virus Influenza in Mice. R. Hare.—p. 411.

Bacterium Enteritidis in Infancy.—Guthrie and Montgomery discuss a disease of infants that occurred in the form of a small epidemic and was characterized by enteritis, meningitis and sometimes cholecystitis. There were twenty-eight cases,

and infections with organisms of the Bacterium enteritidis group were present in all. Sixteen of the cases terminated fatally. With one exception, a boy of 13, the ages of the patients varied from 36 hours to 2 years; sixteen were less than 1 month old, eighteen were boys and ten were girls. The first affected child was separated from the others both in point of time and as regards its infecting organism, which was Bacterium enteritidis variety dublin. All the other cases occurred the following summer within a few weeks, mainly in epidemic form, and were due to Bacterium enteritidis (Gaertner's bacillus). In the interval, no organisms of this group were isolated either in routine feces examinations or from the intestinal contents of enteritis cases, which were regularly taken for culture at post-mortem examination. The source of infection was not traced but it was most probably milk. All the children showed moderately severe catarrhal enteritis with septicemia. Meningitis was present in more than one third and purulent cholecystitis in one seventh of the fatal cases. Eighteen of the twenty-seven children infected with Bacterium enteritidis were patients in the nursery of a maternity hospital and were undoubtedly infected there; four others, born at home and admitted moribund to the Royal Hospital for Sick Children, had no connection with one another and are examples of sporadic infection. The remaining five became infected in this hospital. They were the only cases which originated here and, since they occurred only in wards containing patients from the maternity hospital epidemic, were in all probability infected from them. All the children in the hospital epidemic had been for various reasons relegated to the sick nursery; the infection developed in this nursery and ceased only on its closure. Proof that the infection did not spread to the general wards of the maternity hospital was furnished by the negative results of feces examination from all the babies in the hospital, the only enteritidis strains isolated being from the babies in the one nursery.

Lancet, London

2: 921-968 (Oct. 28) 1939

- Chemotherapy of Meningococcic Meningitis: Review of 147 Consecutive Cases. H. S. Banks.—p. 921.
*Electrosurgical Operation in Gallbladder Diseases: Results of Thirteen Years' Experience. B. O. C. Pribram.—p. 927.
Role of Sympathetic Nervous System in Segmental Pain. W. G. Campbell.—p. 930.
Potassium Iodide and Ipecacuanha as Expectants. S. Alstead.—p. 932.

Electrosurgery in Gallbladder Diseases.—The excellent healing obtained through accurate covering of the liver bed with peritoneum after subserous cholecystectomy without drainage led Pribram to seek similar results in more advanced cases, in which, owing to partial neurosis, advanced inflammation or scars, an exact subserous cholecystectomy (with knife or with scissors) was no longer possible. His idea was to destroy the inflamed mucosa and the inner layers down to the serosa from the inside, thus keeping the serous layer available for covering the hepatic bed with peritoneum. He started these experiments in 1922. At first he used the thermocautery but in 1926 began to use electrocoagulation, which is more quickly and more easily performed than thermocauterization. He describes his technic. Summarizing the advantages of the electrosurgical operation he stresses the following points: (1) It is especially valuable in cases of bad infection; (2) the healing tendency in these cases is as perfect as in simple cases; (3) closure of the abdominal wall without drainage is almost always possible when the process is limited to the gallbladder, and (4) electrocoagulation is the best method of dealing with abscesses of the liver in general. With electrosurgical methods there is no difference in the results, whether operation is undertaken in the acute or in the chronic stage. Even in very acute stages of serious inflammation there is no need to perform cholecystostomy as an emergency operation. Radical mucoclasia is performed at the same stage with an even smaller risk and lasting results. Analyzing more than 1,000 cases in which the electrosurgical operation was performed, the author found that the mortality was under 3 per cent. The electrosurgical operation and the ether method, combined with cholangiography, are his mainstays in dealing with gallstones and hepatobiliary diseases.

Schweizerische medizinische Wochenschrift, Basel

69: 967-1072 (Oct. 28) 1939. Partial Index

- Involvement of Eyes in Acrodynia in Children. E. Feer.—p. 973.
 Eating of Bread as Cause of Numerous Cases of Poisoning by Lead Arsenate. W. Silberschmidt.—p. 975.
 Spontaneous Rupture of Aorta in Two Brothers. H. von Meyenburg.—p. 976.
 Hyperparathyroidism. P. Clairmont and W. Brunner.—p. 980.
 Value and Significance of Vascular Changes in Fundus Oculi in Internal Diseases. W. Löfner.—p. 982.
 Sepsis Caused by Influenza Bacilli. Monnier.—p. 984.
 Question of Various Hereditary Factors in Congenital Clubfoot. R. Scherb.—p. 998.
 *Diathermic Puncture of Ciliary Body a New Operation for Glaucoma. H. Wagner and H. Richner.—p. 1048.

New Operation for Glaucoma.—On the basis of a statistical analysis of the cases of glaucoma that were treated at the ophthalmologic clinic of Zurich during the years 1936-1939, Wagner and Richner demonstrate the great importance of the new method which Vogt devised for the treatment of glaucoma. It is a diathermic acupuncture of the ciliary body. Following thorough anesthesia and exposure of about 2 cm. of the superior or inferior or of the temporal or nasal half of the sclera, diathermic acupuncture is begun with a current strength of from 50 to 60 milliamperes and with a needle which is 0.5 mm. in length and has a caliber of from 0.15 to 0.18 mm. With this needle from ten to fifteen diathermic punctures are made in a belt-like arrangement, 3 mm. away from the limbus. Each puncture requires one half second and the distance between the punctures is from 0.5 to 1 mm. In the same manner an equal number of diathermic punctures are made 4 mm. away from the limbus and, if necessary, the same number are made at a distance of 5 mm. From some of the punctures, a watery or a stringy fluid exudes and there is a considerable reduction in tension. As soon as the bulbous is soft, the operation is terminated by suture of the conjunctiva. It is important that the diathermic punctures be made not too close to the limbus, because this involves the danger of corneal and lenticular injuries. The pains which develop several hours after the operation can be controlled by antineuralgic remedies. The statistical report presented by the authors reveals that this method of treatment was followed by normal pressure in 72.3 per cent of the cases. This figure is high when it is considered that in the majority of these cases one of the customary operations had failed or had been unsuitable. In acute and chronic primary glaucoma and in secondary glaucoma after iridocyclitis the authors perform the classic operations, but by means of diathermic puncture of the ciliary body they are now able to cure a large number of cases of glaucoma which formerly were incurable. The operative intervention is not difficult technically and it can be repeated several times without danger.

Athena, Rome

S: 385-416 (Sept.) 1939. Partial Index

- *Micromelena and Microhematuria in Early Diagnosis of Infantile Scurvy. G. Macciotta.—p. 394.
 Primary Sarcoma of Retroperitoneal Lymph Nodes. G. Bolognesi.—p. 400.
 Traumatic Diaphragmatic Hernia with Strangulation of Stomach and Colon: Case. F. Tempesta.—p. 410.

Microscopic Hemorrhages in Infantile Scurvy.—Macciotta calls attention to the frequency and significance of microscopic gastrointestinal and renal hemorrhages early in the development of infantile scurvy. In a group of 118 artificially fed infants under 18 months of age he observed two classes: (1) those fed with animal milk, which was frequently boiled, and (2) those fed with cereals (alone or with greens). None of the infants had congenital syphilis, tuberculosis or infection. In forty cases the appearance of minimal or microscopic hemorrhages was the only symptom of scurvy. Growth of the infants and the crasis of the blood were normal and there were neither gastrointestinal disorders nor asthenia. Minimal traces of blood appeared occasionally in the feces in thirteen cases. Microscopic hemorrhages were found on chemical examination of the feces in fifty-eight cases. Microhematuria existed in sixty cases. The minimal and microscopic hemorrhages disappeared in the course of the first week of administration of lemon juice or a daily dose of 0.4 or 0.5 Gm. of ascorbic acid in thirty-four cases. Hemorrhages were controlled after the twelfth day of treatment in all but nine of the remaining cases. In almost all cases blood disappeared simultaneously from the feces and the urine. The

author especially observed eight infants of the group. He found that in minimal or microscopic hemorrhages preceding infantile scurvy the resistance of the capillaries is diminished and elimination of ascorbic acid through the urine is slight. Both resistance of the capillaries and elimination of ascorbic acid become normal at the end of a treatment consisting of from 0.05 to 0.07 Gm. of ascorbic acid administered daily by the parenteral route. Examination of the feces and urine of a group of normal breast fed infants used as controls gave constantly negative results for minimal and microscopic hemorrhages. According to the author the minimal or microscopic gastrointestinal and renal hemorrhages, occurring early in the development of infantile scurvy, are the result of disturbances of the metabolism of the ascorbic acid from avitaminosis in the presence of a special lability of the renal and intestinal capillaries. The lability is individual, which accounts for the different reactions of infants to artificial insufficient diets. The author therefore concludes that the evaluation of microhematuria and microscopic gastrointestinal hemorrhages in infants artificially fed or after debilitating diseases is of value for the diagnosis of avitaminosis which precedes infantile scurvy and points out the advisability of establishing vitamin or ascorbic acid treatment for the prevention of infantile scurvy.

Beiträge zur klinischen Chirurgie, Berlin

170: 191-352 (Sept. 28) 1939. Partial Index

- Operative Treatment of Umbilical Hernia. G. Schimkat.—p. 224.
 Osteomyelitis of Os Calcis: Eleven Cases. H. Völckner.—p. 228.
 Origin and Treatment of Postoperative Progressive Gangrene of the Skin. Werwath.—p. 235.
 *Diffuse Angiomatosis of Medulla Oblongata and Spinal Cord with Central Gliosis, Syringomyelia, Cyst of the Pancreas, Renal Cysts and Cystic Hypernephroid Tumors of Both Kidneys (Lindau Syndrome). E. König and H. Schoen.—p. 239.
 Observations on Acute Appendicitis. E. Derra and F. Aulenbach.—p. 266.
 *Alimentary Psathyrosis. R. Kienböck.—p. 311.

Angiomatosis of Medulla Oblongata.—König and Schoen report a case in which a man aged 27 in the course of an illness of ten years' duration exhibited signs and symptoms of organic disease of the central nervous system. Death was apparently due to the involvement of the structures of the posterior occipital fossa. Necropsy revealed an extensive angiomatosis of the medulla oblongata and of the spinal cord involving predominantly the dorsolateral aspect of the latter. There were likewise present central gliosis and syringomyelia. The necropsy further revealed a cyst of the pancreas, cysts of both kidneys and bilateral hypernephromas. The authors interpreted these lesions as a result of a dysontogenic disturbance and their case as a typical example of a syndrome described by Lindau in 1926 and known since in the literature as the Lindau or Hippel-Lindau syndrome. The syndrome is not limited to the developmental disturbances of the mesodermal layer of the nervous system but may exhibit, as in this case, developmental defects of the ectodermal layer as well. A hereditary tendency had been noted by several authors. The patient's family exhibited distinct hereditary lesions.

Alimentary Psathyrosis.—Kienböck proposes the name "alimentary psathyrosis" to include cases previously described as "hunger osteomalacia" or "hunger osteopathy." A symptomatic secondary malacia may develop on the basis of primary alimentary psathyrosis, which is a special form of bone porosis. He would include under this term cases observed shortly after the World War as well as cases described under the terms osteomalacia, osteomalacia-like states and the so-called skeletal functional inadequacy. X-ray studies of these cases reveal numerous areas of rarefaction and secondary fractures in the long and short tubular bones, pseudarthroses, diffuse porosis, and unusually slender and curving bones. The pelvic bones may show areas of rarefaction, fractures and malposition, and the vertebral column may exhibit scoliosis, kyphoscoliosis, porosis and biconcave vertebrae. The "marschgeschwulst" of von Stechow and Köhler's disease of the metatarsals, two well known diseases of the foot, are to be regarded not as specific entities but as abortive forms of the disease under consideration. The clinical picture is one of pain along the bones, local tenderness, thickening and curving of the bones, fractures and disturbances of locomotion. In addition there are to be found an enlargement of the thyroid, thyrotoxic manifestations, tetany and metabolic disturbances. Early involvement of the thyroid may result in

retarded growth. The author believes that the primary factor is a disease of the thyroid which leads to a metabolic upset, which in turn causes disease of the bones. Inadequate or faulty diet, excessive fatigue and physical overexertion frequently play the part of secondary factors in activating a latent condition. The disease is seen with greater frequency in women than in men; the second and third decades give the highest age incidence, although the disease may be observed at any age. The disease manifestations may be mild, severe and even fatal. A correct dietetic hygienic regimen supplemented by orthopedic and surgical therapy is successful in arresting and even curing the less severe cases.

Klinische Wochenschrift, Berlin

18: 1301-1332 (Oct. 7) 1939. Partial Index

- Local and General Metabolism in Disturbances of Peripheral Blood Perfusion. M. Ratschow.—p. 1301.
Early Circulatory Disturbances. L. Delius.—p. 1306.
Demonstration of Tubercle Bacilli by Fluorescence Microscopy. H. Didion.—p. 1315.
Vitamin A Requirements of Human Subjects. W. von Drigalski and H. Kunz.—p. 1318.
*Treatment of Anemia of Prematurely Born Infants and of Postinfectious Anemia by Substances of Respiratory Ferment System. O. Göbell.—p. 1319.
Percutaneous Resorption of Insulin. G. Kingisepp and L. Talli.—p. 1323.

Active Substances of Respiratory Ferment System in Anemias.—Göbell shows that treatment neither with iron nor with vitamin C produced satisfactory results in the anemia of prematurely born infants. He based his own etiologic investigations in this form of anemia on the fact that the erythrocytes serve as vehicle in the hydrogen-oxygen exchange. The mobilization of hydrogen is an enzymatic process. A chain of enzymes with oxydoreductive capacities bridge the considerable electrical tension between the positive oxygen and the negative hydrogen. Enzymes consist of a coferment and an apoferment, the latter effecting the fixation of the coferment on the cell. Synthesis is produced by the adrenal cortex. The active constituent of the coferment is a vitamin, which likewise cannot be utilized without the adrenal cortex. If the hydrogen-oxygen exchange is slowed down for instance by failure of the adrenal cortex or of the respiratory ferment system activated by it, be it as a result of impairment of the adrenal function or by deficiency in the vitamins of the respiratory ferment system, the resulting reduction in oxygen consumption requires oxygen vectors rather than erythrocytes. The author tried nicotinic acid amine and riboflavin, which are constituents of cozymase and of the flavin enzyme, in the treatment of the anemia of prematurely born infants and he observed a favorable effect. He concludes from this that a relative deficiency in these factors plays a part in the pathogenesis of this form of anemia. However, he saw no increase in erythrocytes following the administration of adrenal cortex extract. In the treatment of postinfectious anemia of nurslings and small children he employed adrenal cortex extract and nicotinic acid amide. He found that the hemoglobin content and the erythrocyte count increased in a comparatively short time and thinks that this is due to the fact that the adrenal cortex or its function is impaired by the infection. There is an arrest in the cure of anemia by the aforementioned preparations, when a new infection develops. This observation was made also in the course of iron therapy.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 4825-4900 (Oct. 7) 1939. Partial Index

- Diagnosis and Treatment of Ureteral Calculi. W. F. Suermondt.—p. 4828.
Apophysiolysis of Tuberosity of Tibia. J. J. Nierstrasz.—p. 4834.
*Spondylitis in Brucellosis (Undulant Fever). C. P. H. Teenstra and A. Kropveld Jr.—p. 4839.
Complete Removal of Thyroid in Heart Disease. E. W. Sikemeier.—p. 4846.

Spondylitis in Brucellosis.—Teenstra and Kropveld point out that the symptomatology of brucellosis varies and that on the basis of the predominating symptoms different forms of brucellosis have been differentiated: (1) the catarrhal form, (2) the gastro-enteric form and (3) the arthritic form. That the arthralgic form is of considerable importance is indicated by the fact that Malta fever, a form of brucellosis, in southern France is popularly known as "mal de os" (bone illness). The arthralgic form of brucellosis occasionally involves the vertebral

joints. This the authors demonstrate by reviewing the literature and by describing a case of their own observation. This form of spondylitis is characterized by painfulness, which may be spontaneous or elicitable by percussion of the spinous processes and by stiffness of the back. Occasionally pains may radiate toward the sciatic region. In case the spondylitis is located higher, these pains in the roots may simulate abdominal disorders. The reflexes may be intensified or weakened and occasionally there occur changes in the motility and sensitivity. These neurologic symptoms corroborate Roger's observation of a special affinity of Brucella for the central and peripheral nervous system. X-ray examinations disclose either no changes or only slight decalcifications, the latter being much less severe in brucellosis than in tuberculous spondylitis. In the reported case the existence of a brucellosis was proved by the high agglutination titer, the fever curve, the palpable spleen and the blood picture. The spondylitis involved the thoracic region and was complicated by a paravertebral abscess. The fact that the vertebral process disappeared within five months the authors regard as proof that tuberculous spondylitis can be ruled out and that the spondylitis was caused by brucellosis.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

79: 2433-2496 (Sept. 26) 1939

- Two New Cases of Mite Fever in Java. J. W. Wolff and W. de Graaf.—p. 2434.
*Flit Dermatitis Caused not only by Flit: Differences in Dermatotropic and Insecticidal Reactions Between Flit, Shelltox and Other Insecticides. R. D. G. F. Simons and Jenny Simons-Jantzen.—p. 2442.
Serodiagnosis of Syphilis: A Word of Warning. L. Kirschner.—p. 2454.

Dermatitis Caused by Insecticides.—Simons and Simons-Jantzen point out that "flit," an insecticide, has caused many cases of dermatitis. However, they found that the term "flit" dermatitis was applied erroneously also to forms of dermatitis which were caused by other types of insecticides. They show that the erroneous use of the term flit dermatitis or flit eczema may lead to mistakes in treatment. The patient may be told to avoid the use of flit, when the real cause of his dermatitis was a different insecticide, which he continues to use, thereby making cure impossible or bringing on a new attack. The authors proved by means of patch tests that there may be hypersensitivity to some and not to other insecticides. Occasionally, tests with the same insecticide were negative on the thigh and positive on the back. Perspiration or covering of the skin with bandages or clothing promotes the development of the dermatitis. In order to determine which constituents of the insecticides irritate the skin, with a view of perhaps omitting them without impairment of the insecticidal power, the known constituents were tested separately for their dermatotropic and their insecticidal properties. The substances which proved irritating to the skin were oil of lemon, oil of turpentine and perhaps pyrethrum powder. Without direct contact with the insects these substances did not kill the insects. Thus the constituents which irritate the skin could be omitted without greatly impairing the insecticidal power. The authors tested the different insecticides also with regard to insecticidal efficacy, inflammability and the likelihood of producing spots. They emphasize that the term flit dermatitis either must be interpreted as covering the dermatitis caused by flit as well as by other insecticides or it must be replaced by the term "insecticide" dermatitis.

Acta Chirurgica Scandinavica, Stockholm

83: 1-184 (Oct. 16) 1939. Partial Index

- Bone Regenerating Capacity of Periosteum. G. Levander.—p. 1.
Posttraumatic Late Meningitis After Fracture of Base of Skull. T. Skoog.—p. 27.
Contribution to Knowledge of Importance of Impurities in Diethyl Ether Used for Narcosis: First Report (Acetaldehyde). L. Gisselsson and G. Lindgren.—p. 45.
*Some Experiences in Operation for Cleft Palate. E. Perman.—p. 83.
Hyperinsulinism and Surgery. E. Akerberg.—p. 104.
*Tuberculous Spondylitis: Clinicostatistical Study. T. Walheim.—p. 123.
*Treatment of Hydronephrosis and Renal Pain by Denervation of the Kidney. G. Bauer.—p. 160.

Operation for Cleft Palate.—Perman reports observations in sixty-five cases of cleft palate in which surgical treatment was given at a Stockholm hospital. In five, operation had been performed previously. Of the secondary operations, two were successful and three were failures. Of the sixty children in whom the operation was the primary intervention, thirty-three

were under 3 years of age. In the majority of cases the author used Ernst's method. However, a celluloid plate in the palate was used only for the older children. This plate is unnecessary in children of the age of about 2 years. At this age operation is facilitated by the fact that the abnormal enlargement of the pharyngeal region has not yet come into play. Around the palatal musculature and from the large lateral incisions a silk horsehair suture was made, which affords good fixation of the soft palate upward and backward. This suture corresponds to Veau's wire suture. Of the sixty children undergoing primary operation, one died on account of severe infection of the operative area. In two cases the palatal suture broke away on account of scarlet fever. In still another case, in which Veau's method was employed, the palatal suture broke through completely but healed after reoperation. In three cases the suture healed with a split from 1 to 1.5 cm. in length. In the remaining fifty-three cases healing was complete, in six cases with an insignificant fistula.

Tuberculous Spondylitis.—Walheim presents a clinico-statistical study of the cases of tuberculous spondylitis treated at the department of surgical tuberculosis at St. Göran's Hospital in Stockholm. The material consists of 221 cases in which treatment was administered between 1913 and 1930. Of these, 149 were subjected to Albee's operation and seventy-two were given conservative treatment. Previous to the operation the patient is put in a plaster bed. After he has become accustomed to it, a cruciform pad is placed under the hump, if there is one. The pad is added to every week, and when it has become too high the patient is placed in a new plaster bed which better fits the changed configuration of the spine. When the back has become straight and the patient is in good condition, Albee's operation is performed, a graft from the tibia being used. The patient spends from two to three months in a plaster bed after the operation. When this period is over, the patient is allowed up in a plaster corset with a fenestra in the back over the diseased vertebrae. Wadding is inserted through the fenestra and kept under constant pressure. After a further two or three months the patient is given a leather corset, which he wears for about one year. The patients given conservative treatment stay in a plaster bed for varying lengths of time, depending on the nature of the disease. The corset treatment is the same as for the operatively treated. A review of the results of operative and conservative treatment reveals that the final results are distinctly better in the cases in which surgical treatment is employed. The period of hospitalization was somewhat longer for the patients operated on. This is due partly to the late date at which the operation was performed and partly to the fact that the conservatively treated patients were often admitted when the disease was further advanced. The disease lasted considerably longer in the conservatively treated, owing to some extent to complications such as fistulas. Finally there is obviously a greater tendency to recurrence in the conservatively treated group. The evaluation of the clinical results is based on a follow-up investigation which covers 90 per cent of the surviving patients. When doubt was felt as to these results, an x-ray examination was made. Complete freedom from symptoms was found in 82.7 per cent of the operatively treated and 73.5 per cent of the conservatively treated. With regard to the orthopedic therapy, the correction of gibbuses showed good results in 90 per cent of the operative and 74 per cent of the conservative cases. There was no difference worthy of mention in the spinal mobility of the patients in the two groups.

Denervation of Kidney in Hydronephrosis.—Bauer shows that, in certain cases of pain suspected to be of renal origin, routine urologic examination does not yield demonstrable pathologic conditions or else gives evidence of a low grade hydronephrosis without evident mechanical cause. Research by the Harrises as well as others has made it probable that such pain is caused by a state of spasm in the annular muscles of the renal calices and pelvis as a result of excessive sympathetic nerve impulses to the kidney. Consequently it should be possible to eliminate the cause of the pain by denervation of the kidney. The author reports eleven cases in which treatment was administered by him in accordance with this theory. The pain had in all cases been of several months' or even years' duration, generally with intermittent colicky attacks of a severe nature and at ever shorter intervals. Urologic examination was nega-

tive with the exception of a low grade hydronephrosis and delayed emptying of the opaque medium from the pelvis or from a single calix. By the pain reproduction test, which consists in distending the renal pelvis with saline solution injected with the aid of a ureteral catheter, it was possible to induce a typical attack of pain, which was identified by the patients with their previous pain. Following remarks about the surgical technic, the author says that the results of the renal denervation were favorable. All patients were completely freed from pain. To be sure, in only four of the cases does the time of observation exceed a year. No serious complications occurred. On after-examination, the denervated kidneys were found to produce a normal amount of normal urine. In only one case was the rate of secretion diminished.

Bibliotek for Læger, Copenhagen

131: 403-433 (Oct.) 1939

*Osteoporosis and Osteomalacia of Spinal Column. A. Zacho.—p. 403.

Osteoporosis and Osteomalacia of Spinal Column.—Zacho says that the cause of the pure primary form of this disorder is almost always deficient diet, usually avitaminosis A, while the etiology of the secondary form may depend partly on disturbances in resorption (in disorders of the gastrointestinal tract, liver, biliary tract and pancreas), partly in excretion (in renal disorders) and finally on disturbances in internal secretion. In the form due to disturbances in resorption there is usually deficient resorption of vitamin D and eventually also of calcium salts. The bone disorder of the author's first patient, a woman aged 53 with the menopause at the age of 36, is ascribed to achylia. The second patient, a man aged 58, had simultaneously an avitaminosis A, which yielded to the administration of vitamin A. The bone disorder is attributed to an old dyspepsia (gastritis and enterocolitis). The cause of the disorder of the third patient, a woman aged 72 with typical changes of osteomalacia in the spinal column, is thought possibly to be defective digestion of fat. In all cases treatment with vitamin D and calcium preparations was effective.

Nordisk Medicin, Helsingfors

4: 2983-3044 (Oct. 7) 1939. Partial Index

Hygiea

Pancreatogenic Excessive Enlargement of Liver in Children (Preliminary Report). B. Söderling.—p. 3001.

*Metrazol in Treatment of Barbiturate Intoxication. S. Kallner and T. Rudberg.—p. 3006.

Noise and Measurement of Noise from Hygienic Point of View. R. Huss and N. Nordling.—p. 3007.

Metrazol in Treatment of Barbiturate Intoxication.—Kallner and Rudberg report the results obtained in the treatment of a woman aged 49 admitted twelve hours after she had taken about 46 cc. of somnifen. The reflexes were absent, the temperature was below 95 F., the respiration poor. During the course of the next twelve hours a total of 62 cc. of pentamethylenetetrazol was given intravenously, during the second day 105 cc., on the third day 30 cc., and on the fourth day 40 cc. The respiration improved after each injection, the corneal reflexes appeared on the third day and the patient regained consciousness and the remaining reflexes appeared on the fourth day. The drug was always injected slowly, the last times together with dextrose solution. The patient reacted favorably after all the injections.

4: 3045-3118 (Oct. 14) 1939. Partial Index

Hygiea

Is Anastomosis Legitimate Intervention in Cases of Bile Duct Stone? G. Redell.—p. 3093.

Can Regular Insulin and Protamine Zinc Insulin Be Mixed Before Injection? S. Bjuggren.—p. 3099.

*Roentgenologic Effect of Ramstedt's Operation in Pyloric Stenosis. F. Knutsson and S. Rudberg.—p. 3101.

Effect of Ramstedt's Operation in Pyloric Stenosis.—On after-examination of seven children operated on during the first months of life for pyloric stenosis, Knutsson and Rudberg found that the operation affects only the clinical condition. The roentgenologic stenosis persists for several years, gradually disappearing as in the cases in which only medical treatment is given, as described by Runström and Wallgren.

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DISEASES OF THE HEART AND PERICARDIUM

IN WHICH SURGICAL THERAPY MAY BE INDICATED
CLINICAL LECTURE AT ST. LOUIS SESSION

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In most instances of chronic heart disease, the physician is not able to effect a complete cure but is able to prolong life and to make the patient more comfortable. There are, however, some diseases of the heart or of structures which affect the heart indirectly which respond brilliantly to surgical therapy. These conditions constitute only a small percentage of the total but this does not minimize the importance of diagnosing and treating them. For purposes of convenience, heart disease may be divided into the nonsurgical types, in which treatment is usually palliative, and the surgical types, in which a complete cure can often be accomplished. It is with the latter types that this paper is concerned. To be more specific, angina pectoris, thyrotoxic heart disease, abnormalities of the heart associated with pericardial disease and with abnormal communications between systemic arteries and veins and several miscellaneous conditions will be considered from the point of view of possible surgical therapy. Levine¹ stated recently:

The recognition of the limitations of ordinary medical treatment for many diseases, the lack of specific therapy and the rapid development of surgical technic and newer surgical procedures has brought the general surgeon into contact with problems that not so long ago were entirely confined to the care of the physician. This has been true of practically all the organs of the body. The most recent spheres of surgical interest have been the lungs, the brain and last of all the heart.

ANGINA PECTORIS AND CORONARY SCLEROSIS

The surgical treatment of angina pectoris remains thus far in an unsatisfactory state. The majority of patients with this disease are improved by restriction of activity, avoidance of stress and excitement, reduction of weight in the obese, and the intelligent use of sedatives and of nitrites. One of the several operative procedures should be considered only when these methods have failed and when the patient suffers severe pain while at rest. The choice of surgical therapy may be made from (1) the injection of alcohol about the sympathetic cord and rami of the upper thoracic region, (2) sympathectomy in the same region, (3) total

thyroidectomy and (4) attempts to create an increase in the collateral blood supply to the heart. The least harmful of these in most instances is injection of alcohol about the sympathetic cord. It is necessary that the upper thoracic region be included as well as the lower cervical if the desired effect is to be accomplished. The existence of thoracic cardiac nerves which form direct communications between the upper four or five thoracic ganglions and the heart has been demonstrated. Consequently, a direct operative attack on the sympathetic cord in this area is rarely advisable owing to the severity of the operative procedure and to the poor condition of the patient. The injection of alcohol is easier and less dangerous and in most instances accomplishes the same purpose as the sympathectomy. White² stated:

A certain number of failures are unavoidable, due to the technical difficulty of blocking all of the cardiac rami in thick-chested individuals. Under these circumstances recourse may be had to posterior root section with an almost certain expectation of success; provided the patient is in sufficiently good condition to be subjected to so radical a procedure.

If the injection of alcohol seems inadvisable or if it fails, total thyroidectomy may be considered. This procedure is based on the assumption that it is possible to relieve a patient whose diseased heart is incapable of delivering an adequate flow of blood by diminishing the metabolic demands of the tissues. This procedure frequently results in a cessation of the pain. The mechanism of the immediate relief of pain in some instances is a controversial point. Levine and Eppinger³ made the following comments on total thyroidectomy:

The results obtained in this study indicate that total thyroidectomy produced specific clinical improvement in cases that were refractory to the ordinary methods of treatment. This seemed to be more definite in those with angina pectoris than in those with congestive heart failure. This operation should be undertaken, however, only after the most careful consideration of the diagnosis and prognosis. Furthermore, it must be evident that ordinary medical management has failed and that the operation is likely to result in improvement that is otherwise unobtainable.

Disadvantages of the procedure include the dangers associated with the performance of any major operation on an ill patient, injury to the recurrent nerves or tetany in a small percentage of cases, and finally the production of myxedema. The initial enthusiasm for this operation appears to be diminishing. Levine¹ stated recently:

The entire problem of the removal of the normal thyroid gland for intractable heart disease must still be regarded as in the experimental stage. We must patiently but open-mindedly

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Read in the Surgical Division of the General Scientific Meetings at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 16, 1939.

1. Levine, S. A.: *Clinical Heart Disease*, Philadelphia, W. B. Saunders Company, 1936.

2. White, J. C.: *Progress in Surgery of the Autonomic Nervous System, Surgery* 4:781 (Nov.) 1938.

3. Levine, S. A., and Eppinger, E. C.: *Further Experiences with Total Thyroidectomy in Treatment of Intractable Heart Disease*, *Am. Heart J.* 10:736 (Aug.) 1935.

await further developments. It is a drastic procedure not to be undertaken lightly, for it also produces certain ill effects. Alcohol injections, on the other hand, when properly and successfully performed, have no disadvantage comparable to the myxedema resulting from thyroidectomy and at present ought to be preferable, in certain cases, if expert surgical technic can be obtained.

The employment of a new principle in the treatment of coronary disease has been developed as a result of the observations of a number of workers. The effectiveness of pericardial adhesions in conducting blood has been suggested by reports of cases such as that of Thorel,⁴ in which chronic adhesive pericarditis together with long-standing obliteration of the right and left main coronary arteries were found without a previous history of cardiac distress. Leary and Wearn⁵ have reported cases showing that complete coronary occlusion may not result fatally even in the absence of pericardial adhesions if the process is very gradual. Vascular communications between the coronary system and the fat at the base of the heart were demonstrated by Hudson, Moritz and Wearn.⁶ Moritz, Hudson and Orgain⁷ demonstrated communications between the coronary system and adhesions to the heart. Beck, Tichy and Moritz⁸ showed that a collateral blood supply to the heart can be made available by operation. They stated:

This vascular bed distributes blood supply to the myocardium and experimentally becomes a mechanism which permits compensation that protects a faltering heart from stopping. It makes possible the maintenance of function despite the occlusion of large coronary trunks.

The tissues which were brought into contact with the myocardium in the different experiments⁹ included the pericardium, the pericardial fat, the mediastinal tissues, the adjacent muscles and the omentum. With these experimental and clinical observations as a background, Beck¹⁰ was the first to attempt to increase the blood supply to ischemic heart muscle of patients. The principle employed in these operations is more physiologic than that in the other procedures discussed in that an attempt is made to treat the disease rather than the symptoms.

At the time of his last report (November 1937) Beck¹¹ had operated on twenty-five patients with coronary sclerosis and intractable angina. The operation consisted of grafting vascularized fat and muscle on the heart. In the more recent operations, powdered beef bone has been placed in the pericardial cavity. Of the twenty-five patients, sixteen are living and nine are dead. Whereas the mortality rate for the first twelve patients was 50 per cent, for the last thirteen it was 15.4 per cent. O'Shaughnessy,¹² of London, has used omentum instead of muscle in an attempt to increase

the circulation to the heart. He considers omentum superior to muscle as a vascularizing agent and believes cardio-omentopexy to be a less serious operation than the procedure used by Beck. His results are summarized as follows:

The cases, twenty in number, are considered in two groups: fifteen suffering from angina pectoris and five from other symptoms of cardiac ischemia. Of the first group, five died, while eight of the remaining ten are free of angina. In the second group there was one death and one is free of symptoms.

The operative procedures consisted of cardio-omentopexy with or without the introduction of aleuronat in thirteen cases, of cardiopneumonopexy with the introduction of aleuronat in two and of the simple insertion of aleuronat into the pericardial cavity in five.

It is believed by some that pericarditis is not a complication of coronary thrombosis but rather represents a natural attempt at healing. It is known that one of the mechanisms by which partial occlusion of a coronary artery is compensated is anastomoses between the right and left vessels. The observations cited suggest strongly that the second most likely collateral pathways are between the heart and the surrounding structures. It is logical to believe that this latter route should be facilitated by adhesions between the heart and the parietal pericardium. Time and additional experiences will probably supply the answer as to whether or not this mechanism can be aided by operative procedures. Since it is known that most of the major arteries of the normal animal can be occluded gradually without a fatality resulting, it is perhaps dangerous to draw conclusions from such observations regarding the treatment of patients with general disease of the arterial system. For this reason the final answer will have to be supplied by continued and additional observations on patients.

Ochsner and DeBakey¹³ recently compared the results of treatment of coronary artery disease and pain by paravertebral alcohol block, by total thyroidectomy and by the transplantation of pectoral muscle. The former two were considered successful in slightly more than 80 per cent of the cases. The mortality rate with total thyroidectomy was 3.7 per cent while that with alcohol injection was 1.5 per cent. It should be realized that the average duration of life in anginal patients treated without operation is five years, that most such patients are at an age where life expectancy, even if angina is not present, is not very great, and that conservative therapy properly applied frequently produces marked symptomatic relief. For the present, the several operations with the possible exception of alcohol injection should be regarded as methods of last resort to be employed only when nonoperative means are inadequate.

ARTERIOVENOUS FISTULA

This consideration includes only the direct unnatural communications between arteries and veins. These connections usually result from trauma but they may be congenital in origin. The traumatic ones result most frequently from wounds with a knife or bullet and naturally are particularly apt to be made between vessels encased in a common sheath. The effects of these abnormal communications on the circulatory system have been determined by Holman¹⁴ and others. A large part of the arterial circulation is diverted directly into a vein and it returns to the heart without having

4. Thorel, Charles: *Pathologie der Kreislauforgane, Ergebn. d. allg. Path. u. path. Anat.* 9: 673, 1903.

5. Leary, Timothy, and Wearn, J. T.: Two Cases of Complete Occlusion of Both Coronary Orifices, *Am. Heart J.* 5: 412 (April) 1930.

6. Hudson, C. L.; Moritz, A. R., and Wearn, J. T.: The Extracardiac Anastomoses of the Coronary Arteries, *J. Exper. Med.* 56: 919 (Dec.) 1932.

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12. Davies, D. T.; Mansell, R. E., and O'Shaughnessy, Laurence: Surgical Treatment of Angina Pectoris and Allied Conditions, *Lancet* 1: 1 (Jan. 1), 76 (Jan. 8) 1938.

13. Ochsner, Alton, and DeBakey, Michael: The Surgical Treatment of Coronary Disease, *Surgery* 2: 428 (Sept.) 1937.

14. Holman, Emil: *Arteriovenous Aneurysm: Abnormal Communications Between the Arterial and Venous Circulations*, New York, Macmillan Company, 1937.

gone through the capillaries of the part for which it was intended. This results in an increase in the output of the heart in order that the part distal to the fistula may receive sufficient blood for its requirements. As a result of this increased demand on the heart, cardiac hypertrophy and dilatation take place in a high percentage of cases. It is mainly in order to prevent heart failure that operation is indicated.

If one knows that arteriovenous fistulas may occur, there should be little if any difficulty in making a diagnosis. Particularly characteristic are the loud, persistent, continuous, machinery-like murmur and the thrill. These signs disappear if the fistula is in such a position that it may be closed temporarily by pressure. Enlargement of the heart is usually detected by physical signs and x-rays if the fistula has been present for a considerable time. The history of injury clinches the diagnosis in the instances due to trauma.

The ideal operative procedure consists of the closure of the fistulous opening and the restoration of the continuity of both the artery and the vein. Brooks¹⁵ stated:

It is not always possible to carry out this ideal procedure, and the records of all reported cases for the cure of arteriovenous fistula show such universally good results to follow the extirpation of the segments of vessels containing the fistulous opening that it is perhaps the best method to be used by those not particularly skilled in blood vessel suture.

It is well to remember that simple ligation of the artery or artery and vein usually does not effect a cure. The heart usually returns to its normal size after closure of the fistula. An extremely interesting and unusual report is that of Rienhoff and Hamman¹⁶ of a patient with *Streptococcus viridans* infection at the site of an arteriovenous fistula. Complete recovery followed the extirpation of the fistula.

THYROTOXIC HEART DISEASE

It is not my purpose in this paper to consider in detail the heart disease which is associated with thyrotoxicosis. Of the several types of chronic heart disease which respond favorably to surgical therapy, this is probably the most common. As has been emphasized by Levine¹ and others, this type is probably the most important of all heart diseases for it comprises the one large group of patients for whom the difference between the right and wrong diagnosis and treatment is the difference between chronic illness or death and health. The severity of the cardiac symptoms is extremely variable. Andrus¹⁷ stated:

The cardiac manifestations of hyperthyroidism constitute a prominent phase of this syndrome. Yet it is often difficult, sometimes impossible, to correlate the severity of these with the other clinical signs. At one extreme, signs of cardiac failure may be so conspicuous as to mask the concomitant hyperthyroidism; at the other, a patient may perish in the flame of a "thyroid crisis" without symptoms of myocardial insufficiency.

The variations in symptomatology with age and sex should be considered in estimating the status of the thyrotoxic patients. Means¹⁸ stated:

In the younger patients the nervous symptoms definitely tend to be more in evidence than in the older, whereas in the older

the circulatory are more in evidence. Often in the older patients emotional instability is hard to identify and the symptoms and signs are manifestly circulatory.

As regards the influence of sex on the cardiac symptoms, usually these symptoms are more severe in women even though the average age of the men is greater and the severity of the thyrotoxicosis is more marked. It should be remembered that a common diagnostic error with young subjects is to consider thyrotoxicosis present when it is absent, and a common diagnostic error with the elderly is to overlook thyrotoxicosis when it is present. It should be remembered that an elevation in the basal metabolic rate is frequently encountered in congestive heart failure, regardless of the cause. The rate should be redetermined after treatment has resulted in the elimination of as much congestion as possible. It may be wise to determine the effect of morphine on the metabolic rate, as it usually depresses the elevated metabolism of ordinary heart failure but not that of thyrotoxicosis.

Andrus¹⁷ found that the incidence of heart failure was higher in those with toxic adenomas than in those with exophthalmic goiter. This may be due to the greater average age in the former patients. Means¹⁸ found that the incidence of congestive failure among thyrotoxic patients in the Massachusetts General Hospital was 3.9 per cent, of paroxysmal fibrillation 2.8 per cent and of permanent fibrillation 5.2 per cent. This incidence of congestive failure is considerably lower than that in Andrus's series.

A number of theories have been advanced as to the causes of congestive failure in thyrotoxicosis. Hurxthal¹⁹ and Means¹⁸ agree that it is not due to a work hypertrophy of the heart. Hurxthal¹⁹ stated:

Therefore, in conclusion, we consider the most significant causes of congestive heart failure in hyperthyroidism: (1) age and the coexisting cardiovascular changes associated with it; (2) the specific heart drive incited by thyrotoxicosis; (3) auricular fibrillation; (4) duration and intensity of thyroid overactivity.

Andrus¹⁷ stated that the metabolic alterations in the myocardial tissue in hyperthyroidism render this work abnormally expensive and this may result in cardiac failure in persons whose circulatory reserve has been diminished by age or preexisting heart disease. Maher and Sittler²⁰ believe that thyrotoxicosis makes evident latent cardiovascular lesions which resume their latency after successful treatment of the thyroid disease. According to Means¹⁸:

Cardiac insufficiency in the course of toxic goiter is looked upon as the result, in most instances at least, of thyrotoxicosis upon an already diseased heart. The weight of evidence favors the view that excess of thyroid hormone even over long periods does not specifically injure the myocardium. It may through depleting it of glycogen make it more vulnerable to other evil influences. It is recognized that, in the older patients particularly, thyrotoxicosis may cause fibrillation and that long continued heart fibrillation may lead to heart failure. The recent work of Weiss introduces the possibility that in the malnourished cases avitaminosis B may play a role in any heart failure which may be present.

The preoperative preparation of patients with cardiac symptoms associated with thyrotoxicosis is unusually important. The treatment may include rest, sedatives, digitalis if edema and dyspnea are present, and of course

15. Brooks, Barney: The Treatment of Traumatic Arteriovenous Fistula, *South. M. J.* 23: 100 (Feb.) 1930.

16. Rienhoff, W. F., Jr., and Hamman, Louis: Subacute Streptococcus Viridans Septicemia Cured by Excision of an Arteriovenous Aneurysm of the External Iliac Artery and Vein, *Tr. Am. S. A.* 53: 417, 1935.

17. Andrus, E. C.: Clinical and Experimental Observations upon the Heart in Hyperthyroidism, *Tr. A. Am. Physicians* 47: 47, 1932.

18. Means, J. H.: The Thyroid and Its Diseases, Philadelphia, J. B. Lippincott Company, 1937.

19. Hurxthal, L. M.: Heart Failure and Hyperthyroidism, with Special Reference to Etiology, *Am. Heart J.* 4: 103 (Oct.) 1928.

20. Maher, C. C., and Sittler, W. W.: The Cardiovascular State in Thyrotoxicosis, *J. A. M. A.* 106: 1546 (May 2) 1936.

compound solution of iodine. Concerning the use of quinidine, Lahey and Hurxthal²¹ stated:

No attempt is ever made to convert auricular fibrillation to normal rhythm by the use of quinidine until after the operation. Then in selected cases quinidine is administered but never earlier than five days after the last operative procedure. If normal rhythm in hyperthyroidism be restored preoperatively by quinidine, auricular fibrillation will frequently reappear as the result of the postoperative toxic reaction and thus the quinidine be wasted.

The treatment of thyrocardiac patients is discussed by Harrison²² as follows:

Therapy in such cases should be directed primarily toward the underlying metabolic disturbance, but in addition the congestive phenomena should be treated in the usual way. Ordinarily it is unwise for thyroidectomy to be done until the manifestations of decompensation have been overcome. Some authors believe that digitalis should not be administered to patients with hyperthyroidism and it is true that tachycardia does not constitute an indication for the drug. However, congestive failure does constitute such an indication, and although here as in other types of cardiac disease digitalis may fail, it frequently produces gratifying results. While congestive heart failure is being treated, iodine should be administered in the usual way. Whether or not the measures which have been mentioned produce clinical improvement, the patient should be subjected to thyroidectomy, because conservative nonoperative treatment is rarely efficacious in severe cases, although it is very beneficial as a preliminary measure previous to operation.

The use of bromides for these patients, particularly the aged, is attended with a great deal of danger. Most important in the surgical treatment is the removal of a sufficient part of the thyroid, leaving only a small amount at each posterior capsule. Myxedema is a rare sequel but inadequate removal with recurrence occurs not infrequently. In regard to this point, Lahey and Hurxthal²¹ stated:

When insufficient removals are done and hyperthyroidism persists, these patients, who at best are hazardous risks, must be submitted again to a doubly hazardous procedure and where repeated operations are done, particularly those upon recurrent hyperthyroidism which makes them technically difficult, the mortality will of necessity be further elevated.

They found that thyroidectomy resulted in a restoration of cardiac compensation in 95 per cent of their cases and in an abolition of auricular fibrillation in 72 per cent of the patients who had this abnormality.

PERICARDIAL DISEASE

In this paper I am concerned in the main with more or less chronic heart disease, but a few remarks will be made concerning the effects of acute intrapericardial pressure, as this sometimes progresses into chronic compression of the heart. The clinical manifestations of acute intrapericardial pressure may be produced by any agency which results in the rapid accumulation of blood, fluid or air, sterile or infected, in the pericardial cavity. The most important signs on physical examination may include a moderate prominence of veins and an increase in the venous pressure, a paradoxical pulse, tachycardia, a small pulse pressure and, most helpful of all in diagnosis, an absence or suppression of the pulsations of the heart on fluoroscopic examination. There is very little increase in the size of the heart-pericardial area on x-ray and physical examination. If the increase in intrapericardial pressure persists for a number of days, the pericardium becomes larger and the superficial veins become more prominent. X-ray examination at

this time reveals a marked increase in the size of the heart-pericardial area. If the accumulation of fluid or pus continues over a period of weeks or months, ascites, edema, pleural effusion and an enlarged liver are to be noted.

That wounds of the heart are of rather frequent occurrence is shown by the fact that Elkin²³ has reported twenty-two of these and Bigger²⁴ has reported seventeen in approximately an eight year period. However, operation is not always necessary, as is demonstrated by the experience of Turner²⁵ at Meharry, who last year treated successfully three patients by aspiration alone after sufficient time had elapsed for the bleeding to stop. Bigger²⁶ stated that aspiration is indicated for patients who show a satisfactory response to non-operative therapy such as the intravenous injection of fluid. The treatment of cardiac tamponade due to hemorrhage consists usually of opening the pericardium and of suturing the wound in the heart. The treatment of pyogenic infections of the pericardium consists of drainage after a definite diagnosis has been made. Accumulations of fluid which are nonpyogenic in origin should not be drained except in very occasional instances. If the tamponade becomes very marked, aspiration should be performed. The results following the drainage of tuberculous pericarditis associated with the accumulation of a large quantity of fluid are bad. In some instances, and this is particularly true in infections due to the tubercle bacillus and to the staphylococcus, the fluid is slowly absorbed and is replaced by a dense scar involving the pericardium and epicardium.

During the past eleven years, forty-three patients strongly suspected of having or proved to have tuberculous of the pericardium have been admitted to the Vanderbilt University Hospital.²⁷ Most of those whose illness was chiefly caused by pericarditis were more than 40 years of age. A positive diagnosis was made as a result of aspiration, operation or autopsy on twenty-five patients. The pericardium of two of these patients was drained during the acute stage under the mistaken impression that there was a pyogenic infection, and these patients died a number of weeks later. The only patients in this group who are living are four of those on whom pericardiectomy was performed after the fluid disappeared and a more chronic stage of the disease was reached. However, some activity was still present. This is not meant to imply that all patients with tuberculous pericarditis die unless operation is performed. Tuberculous pericarditis was strongly suspected but not proved for the remaining eighteen patients, who were in general less ill than the others. Eight of these are dead, four are free of symptoms and the remaining six are wholly or partially incapacitated. Certainly the mortality rate is high.

As stated, infections with the tubercle bacillus and *Staphylococcus aureus* are particularly apt to result in chronic constrictive pericarditis with compression of the heart. In fact, all pyogenic infections of the cavity which are not drained are apt to result in this condition. Following drainage of the pericardium for a pyogenic infection, constrictive pericarditis has resulted once in

23. Elkin, D. C.: The Diagnosis and Treatment of Wounds of the Heart: A Review of Twenty-Two Cases, *J. A. M. A.* **111**:1750 (Nov. 5) 1938.

24. Bigger, I. A.: Heart Wounds: A Report of Seventeen Patients Operated upon in the Medical College of Virginia Hospitals and a Discussion of the Treatment and Prognosis, *J. Thoracic Surg.* **8**:239 (Feb.) 1939.

25. Turner, E. L.: Personal communication to the author, 1939.

26. Bigger, I. A.: The Indications for Surgery in Lesions of the Heart and Pericardium, *J. South Carolina M. A.* **3**:4:147 (June) 1935.

27. Blalock, Alfred, and Levy, S. E.: Tuberculous Pericarditis, *J. Thoracic Surg.* **7**:132 (Dec.) 1937.

21. Lahey, F. H., and Hurxthal, L. M.: Postoperative End Results in Three Hundred Thyrocardiacs, *Am. J. Surg.* **24**:225 (May) 1934.

22. Harrison, T. R.: Failure of the Circulation, Baltimore, Williams & Wilkins Company, 1935, p. 313.

the experience of my co-workers and me and twice in that of Bigger.²⁸ Rheumatic infection has not been the etiologic agent in our experience²⁹ and in that of White³⁰ and Churchill.³¹ Chronic constrictive pericarditis may be defined as thickening and contraction of the pericardium or epicardium or both with the result that the heart cannot carry out its functions competently. Usually the pericardial cavity is entirely obliterated but in some instances there are small areas in which the two surfaces are not adherent. Calcification may be present or absent. The major disturbance in cardiac function results from the inability of the heart to dilate during diastole and hence its inability to receive enough blood to propel. Atrophy of the heart muscle frequently results in disease of long duration. This disease was recognized many years ago but only recently have its frequency and response to treatment been appreciated. Churchill³¹ stated in 1929 that there were only thirty-seven cases throughout the world in which pericardiectomy had been performed. Since that time, a greater total of operations than this have been carried out in three clinics in America.

In association with Dr. C. S. Burwell and others I have observed twenty-two patients with an undoubted diagnosis of constrictive pericarditis in the Vanderbilt Hospital in the past ten years. Most of them complained of weakness, dyspnea on exertion, an enlarged abdomen, cough and edema. Physical examination usually disclosed prominent veins, elevated venous pressure, peripheral edema, an enlarged liver, ascites, pleural effusion, paradoxical pulse, low pulse pressure, tachycardia and a quiet heart which was relatively small and which exhibited little if any pulsation under the fluoroscope. The great degree of systemic congestion was out of proportion to the moderate amount of dyspnea. The tubercle bacillus was the etiologic agent in most of these cases. The majority of patients for whom the scar was removed from a large part of the right and left ventricles are greatly improved or cured. The prognosis is better for patients with non-tuberculous disease. It is necessary to perform a pericardiectomy in some instances in the presence of an unhealed scar due to tuberculosis if signs of compression increase despite the fact that the fluid has disappeared from the pericardial cavity.

MISCELLANEOUS CONDITIONS

A form of heart disease comparatively rare except in infants is that which is associated with congenital abnormalities. The musculature is usually essentially normal but the valves or chambers of the heart or the large blood vessels are constructed improperly. The abnormalities of the heart are usually multiple and the physical signs may not be sufficiently distinctive for proper differentiation. As pointed out by Munro,³² the type of abnormality which would be expected to respond most favorably to operation is the patent ductus arteriosus, and he described the technic for this procedure in 1907. Abbott³³ described the postmortem observations on ninety-two patients with this condition who had no other complicating congenital abnormalities. Most of the deaths were due to heart failure and to bacterial endocarditis. The first attempt at obliteration

of a patent ductus was reported by Strieder in 1937.³⁴ The patient had subacute bacterial endocarditis. Death occurred on the fourth postoperative day as a result of acute dilatation of the stomach. Gross and Hubbard³⁵ reported very recently the first successful instance of ligation of the ductus arteriosus. Dramatic improvement occurred in this child of 7 in whom cardiac hypertrophy was taking place. Since heart failure, bacterial endocarditis and pulmonary tuberculosis are common complications of patent ductus arteriosus and since the correction of the deformity is founded on sound principles, it is likely that additional patients will be benefited by ligation of the duct. Unfortunately, this abnormality is often associated with others and it is possible to harm rather than help the patient by occlusion of the duct.

A common disease of the heart is associated with deformities of the valves. Such deformities may cause a regurgitation of blood through the valves when they should be closed or an impediment to the flow when they should be open. The attempts by operative means to benefit patients with mitral stenosis, although brilliant in concept and in execution, have not been encouraging. The valves may be modified but not reconstructed. Perhaps congenital pulmonary stenosis of the membranous type offers the best possibility for a successful surgical attack. At any rate, the surgical treatment of valvular disease has not progressed beyond the experimental stage.

Mediastinopericarditis is associated with a large heart in contrast to the smaller heart seen in constrictive pericarditis, and there is usually a visible systolic retraction of the precordial area. An operation which consists simply of removal of some of the bony parts overlying the heart has apparently resulted in improvement in a number of cases. On this point, however, there is a difference of opinion and Beck³⁶ believes that this procedure has no place in cardiac surgery. I am inclined to agree with the opinion of Bigger:²⁶

... while adhesions between the epicardium and pericardium alone do no particular damage, such adhesions when associated with fixation of the pericardium to the chest wall or diaphragm do add a great burden to the heart, producing hypertrophy and dilatation, and eventually failure. Admittedly, such cases are rare, but when correctly diagnosed they may be relieved by this simple procedure.

Graham and his associates³⁷ are of the opinion that decompression by the removal of ribs and cartilages is indicated in a few of the cases with great enlargement of the heart. The mere bulk of the heart and not the presence of adhesions is the chief feature in these cases. A somewhat similar operative procedure may be indicated in cases with pectus excavatum.

Extracardiac conditions such as thoracic tumors that produce pressure on the heart or great vessels may exert deleterious effects. Even the tumors benign from a cellular point of view may be malignant by virtue of position. The treatment consists of removal when this is feasible. Tumors and cysts of the heart and pericardium are rare but are by no means unknown. A number of different factors should be considered in determining whether or not removal should be attempted. The same is true in instances of foreign

28. Bigger, I. A.: Personal communication to the author, 1938.
29. Burwell, C. S., and Blalock, Alfred: Chronic Constrictive Pericarditis, *J. A. M. A.* **110**: 265 (Jan. 22) 1938.
30. White, P. D.: Chronic Constrictive Pericarditis (Pick's Disease) Treated by Pericardial Resection, *Lancet* **2**: 539 (Sept. 7) 1935.
31. Churchill, E. D.: Decorication of Heart (Delorme) for Adhesive Pericarditis, *Arch. Surg.* **19**: 1457 (Dec.) 1929.
32. Munro, J. C.: Ligation of the Ductus Arteriosus, *Ann. Surg.* **46**: 335, 1907.
33. Abbott, Maude E.: Atlas of Congenital Heart Disease, New York, American Heart Association, 1936, pp. 60-61.

34. Strieder, J. W.: Discussion of Papers on Cardiac Surgery, *J. Thoracic Surg.* **7**: 151 (Dec.) 1937.
35. Gross, R. E., and Hubbard, J. P.: Surgical Ligation of a Patent Ductus Arteriosus: Report of First Successful Case, *J. A. M. A.* **112**: 729 (Feb. 25) 1939.
36. Beck, C. S.: Acute and Chronic Compression of the Heart, *Am. Heart J.* **14**: 515 (Nov.) 1937.
37. Graham, E. A.; Singer, J. J., and Ballón, H. C.: Surgical Diseases of the Chest, Philadelphia, Lea & Febiger, 1935, p. 300.

bodies in the heart and pericardium. Beck³⁸ is of the impression that a plastic procedure in the nature of a graft of fascia or pericardium is indicated for some patients with contusions of the heart.

SUMMARY AND CONCLUSIONS

At the present time there are relatively few indications for the employment of surgical procedures in the treatment of angina pectoris.

A number of patients give evidence of congestive heart failure associated with thyrotoxicosis, pericardial disease and arteriovenous fistula for which surgical therapy is usually indicated. Although these patients constitute only a small proportion of those with heart disease, the results of surgical treatment are usually so satisfactory that these conditions should be kept in mind.

TUBERCULOSIS IN HOSPITAL PERSONNEL

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The medical profession has long been familiar with the fact that many persons have tuberculous lesions of the lungs which appear, regress and heal without ever giving rise to symptoms or physical signs. Only recently has this fact assumed significance for the practitioner. Formerly asymptomatic tuberculosis passed undetected until, in the course of postmortem examinations, these old healed lesions were revealed to the pathologist. The clinician's experience was limited to frank clinical tuberculosis because diagnostic methods were not sufficiently refined to reveal minimal lesions.

Today roentgenology has developed to the point at which some of these symptomless lesions are visualized from the time of infection to complete healing. As a result the clinician now has evidence of both (a) the preclinical stages of early tuberculosis and (b) the asymptomatic lesion which will heal without ever giving rise to clinical disease. The lesions of clinical tuberculosis appear in less than 2 per cent of the population, while the lesions which heal without clinical signs occur in many persons and vary according to race, social and economic status and other factors. This extension of the diagnostic horizon has had far reaching effects on the prevention and treatment of tuberculosis as well as in coloring reports on morbidity. In this paper only the effect on reported morbidity will be considered.

The incidence of tuberculosis as now revealed by roentgenographic case finding includes both those cases in which there is a lesion which will run a benign course and those in which there is a minimal lesion of early clinical disease. When roentgenograms are not used for case finding, incidence includes only clinical tuberculosis. The difference between the two in the reported morbidity is large. For example, at the University of Wisconsin the first year after the introduction of roentgenologic case finding methods the reported incidence of tuberculosis was increased 430 per cent over the average for the previous fourteen years.¹ Another example is reported by Ferguson.² Among 20,000 university students at institutions where some

type of case finding program exists the reported incidence is six times that among 70,000 students in otherwise similar institutions but which have no case finding routines. In the Metropolitan Life Insurance Company,³ which provides a case finding program by annual fluoroscopic or roentgen examination of all its employees, among women between the ages of 20 and 24 the annual incidence of new tuberculosis is four in each thousand employees. Among the employees of the New York Telephone Company⁴ with no case finding program but with complete diagnostic service, the reported annual incidence of new pulmonary tuberculosis is less than one in each thousand women.

These data demonstrate that a variation in the reported tuberculosis incidence for two groups does not necessarily indicate a difference in actual morbidity but usually reflects differences in case finding technics. The technics employed range from those groups which have no case finding program whatever to those having tuberculin tests with two or more chest films a year. Comparison of the incidence of tuberculosis found by such extremes in examination methods is analogous to comparison of the incidence of syphilis found in a group on physical examination with that found in a group having annual serologic tests. Studies of comparative morbidity can yield valid conclusions only when limited to incidence determined by similar case finding procedures. Disregard of the effect of case finding technic can lead to nothing but confusion—a fact amply illustrated by the literature on the incidence of tuberculosis among hospital personnel.

The idea that tuberculosis was less common among hospital personnel than among the general population prevailed for many decades. Sixty years ago Williams⁵ reported: "In the care of 15,662 tuberculous patients at the Brompton Hospital for Consumption in London, over a period of twenty years not a single case of pulmonary disease developed among the physicians and the hospital personnel in spite of the worst hygienic conditions." Nurses in those days were older and semiskilled in contrast to the professional trained women of today. Under modern conditions at Trudeau Sanatorium,⁶ where many advanced cases are under treatment, no case of pulmonary tuberculosis developed in forty-five years among hundreds of employees.

Heimbeck,⁷ of Norway, aroused new interest in the subject when he reported the development of tuberculosis in 155 of his nurses in the course of 5,364 observation years, an incidence higher than that reported by any one before or since. A number of American and Canadian observers have also reported a high incidence of tuberculosis among student nurses.⁸

3. Fellows, H. H.: Personal communication to the author.

4. McSweeney, Edward S.: Personal communication to the author.

5. Williams, quoted by Mücke, H.: *Die Tuberkulose des Pflegepersonals*, Beitr. z. Klin. d. Tuberk. 64: 115-179 (Jan.) 1926.

6. Baldwin, E. R.: Danger of Tuberculous Infection in Hospitals and Sanatoria, U. S. Vet. Bur. M. Bull. 6: 1-4 (Jan.) 1930.

7. Heimbeck, Johannes: Immunity to Tuberculosis, Arch. Int. Med. 41: 336-342 (March) 1928; Tuberculosis in Hospital Nurses, *Tubercle* 18: 97-99 (Dec.) 1936.

8. These include:

Bow, M. R.: Physical Examination of Nurses, Before and During Employment, Canad. Pub. Health J. 28: 63-66 (Feb.) 1937.

Geer, E. K.: Tuberculosis Among Nurses, Arch. Int. Med. 49: 77-87 (Jan.) 1932.

Gordon, Burgess, and Cashman, W. M.: Tuberculosis in Workers After Residence in a Tuberculosis Hospital, J. A. M. A. 94: 1643 (May 24) 1930.

Jones, D. W. C.: An Inquiry into the Incidence of Tuberculosis in a New Zealand Hospital, *Tubercle* 15: 59-67 (Nov.) 1933.

O'Hanlon, George: Health Programs for Nurses and Employees, Bull. Am. Hosp. A. 9: 112-118 (Jan.) 1935.

Shipman, S. J., and Davis, E. A.: Tuberculosis and Tuberculous Infection Among Nurses, Am. Rev. Tuberc. 27: 474-487 (May) 1933.

Myers, J. A.; Trach, Benedict; Diehl, H. S., and Boynton, Ruth E.: Tuberculosis in Medical, Nursing and Hospital Personnel, Ann. Int. Med. 11: 2181-2205 (June) 1938.

Amberston and Riggins,¹² Badger and Spink,¹³ Wellborn.¹⁴

38. Beck, C. S.: Contusions of the Heart, J. A. M. A. 104: 109 (Jan.) 1935.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. Stiehm, R. H.: Tuberculosis Among University of Wisconsin Students, Am. Rev. Tuberc. 32: 171-182 (Aug.) 1935.

2. Ferguson, L. H.: A Study of College Students, J. Outdoor Life 31: 299-301 (Aug.) 1934.

In five nurses' training schools in New York City from September 1935 to March 1939 there were 2,085 nurses enrolled for periods of from a few months to three years. Semiannual roentgenograms were taken. Twenty-two new pulmonary lesions were found on films—an annual incidence of 6.7 per thousand nurses.

When the rate of tuberculosis among student nurses is compared to that among groups outside the hospital, it is necessary to remember that among women at this age (18 to 24) there is more tuberculosis than at any other age.⁹ For women, the peak of mortality from pulmonary tuberculosis (chart 1) is in the 20-24 year age group, indicating a peak of morbidity at about 20 years of age, which is the average age of student nurses. One must therefore expect a higher incidence than among older or younger women. A higher incidence is expected than among women of the same age who are not under as efficient a case finding program. The insurance company conducts annual fluoroscopic examinations. Because our nurses' case finding method consisted of roentgenograms taken twice a year we expect to find an incidence higher than 4 per thousand.

Fortunately, we can refer to groups of students of about the same age as our student nurses who have likewise had periodic roentgen examinations.² In colleges where case finding methods prevail, the annual incidence among women varies from 3.1 to 12.7 per thousand; for the whole group it is 7.5. The annual rate in the five training schools on which I am reporting is 6.7 per thousand. Thus, if all conditions are taken into consideration—if comparisons are properly made—student nurses do not show a higher tuberculosis morbidity. But if the number of our student nurses with tuberculosis is divided into those who were tuberculin positive on entry and those who were tuberculin negative, it is found that the incidence among the originally negative is six times the positive. In other words, the tuberculin positive nurses have a lower tuberculosis rate than similar groups outside of hospitals, while the tuberculin negative nurses have a higher rate.

Studies of tuberculosis are less numerous among graduate nurses than among students, and most of the reports, in contrast with those on student nurses, do not show a greater morbidity among graduate nurses than among the general population.¹⁰

The municipal hospitals of New York City employ 5,000 graduate nurses with an estimated annual turnover of 1,000. In a three and a half year period, forty-one cases of tuberculosis were discovered. Until this study was under way about two years, preemployment films were not taken on all graduate nurses, so that this number probably includes some preexisting lesions. This annual incidence of 2.4 per thousand is about the same as the incidence among similar groups of women outside of hospitals.

In the New York municipal hospitals there are 753 interns in service. In three and a half years five interns with negative films on beginning service showed evidence of pulmonary tuberculosis. Four of these

were at the largest single institution with 155 interns, where they are most diligently examined, and there was only one in all the other eighteen institutions in which 598 interns were engaged. A sixth lesion became manifest three months after the conclusion of the doctor's service at the largest institution mentioned.

As far as I know, none of the nurses became tuberculous after the observation ended. After employees leave the institution—though they continue contacts with patients—they are no longer examined periodically, and the reported incidence drops to a minimum; in fact, it drops below the expected incidence for that age-sex group in the general population in which no case finding program is maintained.

Among the porters, maids and hospital attendants in the municipal institutions, about 3,000 have some contact with patients. The women slightly outnumber the men. In three and a half years there have been

eleven cases of pulmonary tuberculosis among these employees. The distribution of this morbidity among the various hospitals bears no relation to the amount of contact with tuberculous patients. In a semiskilled

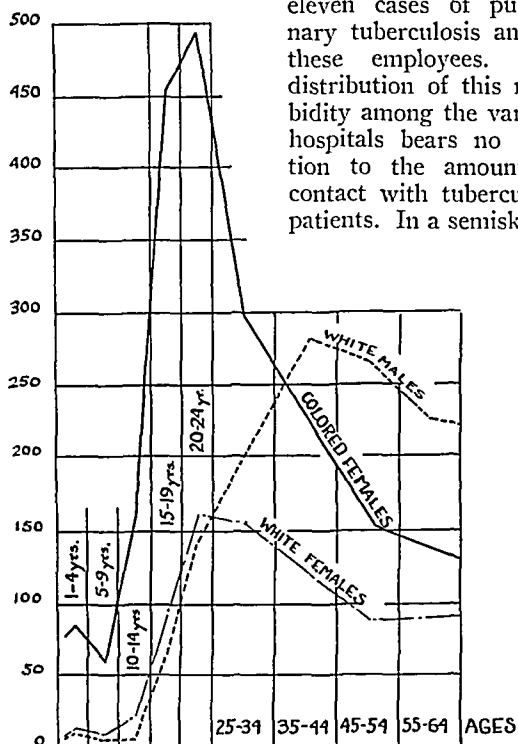


Chart 1.—Average annual death rates per hundred thousand, showing that the maximum mortality for women with pulmonary tuberculosis is in the age group of student nurses, based on figures from the industrial department of the Metropolitan Life Insurance Company, 1911-1935.⁹

group this incidence is certainly not higher than that in similar groups outside of hospitals.

To return to a consideration of the symptomless transient lesions of the lungs found solely on roentgen examination, some of these represent the fresh primary lesion—the first infection for that individual. This roentgen evidence is found in only one out of five persons who are infected and may be seen some weeks after infection takes place. In the great majority of children and adults the primary lesion gives no evidence of its presence even on the roentgenogram, but one can infer its presence somewhere in the body only because the individual has become allergic to tubercle bacillus protein, as demonstrated by a Pirquet or Mantoux test. When a roentgenogram shows this primary lesion soon after the infection takes place, it can be differentiated only with difficulty from minimal clinical (secondary) tuberculosis. Some workers consider an

9. Dublin, L. J., and Lotka, A. J.: Twenty-Five Years of Health Progress, New York, Metropolitan Life Insurance Company, 1937, pp. 99-104.

10. Welborn, M. B.: Incidence of Tuberculosis Among the Personnel of the College of Medicine and the Cincinnati General Hospital, *J. Med.* 18: 563-566 (Jan.) 1938. Mariette, E. S.: The Tuberculosis Problem Among Nurses in a Tuberculosis Sanatorium, *Tubercle* 18: 103-125 (Dec.) 1936. Pollock, W. C., and Forsee, J. H.: Reinfection Among Tuberculo-Allergic Doctors and Nurses at Fitzsimons Hospital, *Am. Rev. Tuberc.* 31: 203-216 (Feb.) 1935. Ulmar, D., Ornstein, G. G., and Epstein, H. H.: Pulmonary Tuberculosis as an Occupational Disease in a Tuberculosis Hospital, *Quart. Bull. Sea View Hosp.* 2: 49: 68 (Oct.) 1936. Badger and Spink.¹¹

active primary infection no more indication for treatment than a recently acquired allergy to tuberculin.¹¹ More than 95 per cent of the population in a great city acquire the primary lesion and are not aware of it. When accidentally found on chest films years later it is usually easy to differentiate between these old lesions and the shadows of early clinical disease. These primary lesions are of great importance in a statistical study. Obviously no fresh primary lesions will come to light, no matter how often roentgenograms are made among persons tuberculin positive at the beginning of the observation period. However, a group of tuberculin negative persons who have periodic roentgenograms made will always show some fresh primary lesions. The greater the number of negative tuberculin reactors in the group observed, the greater also will be the apparent morbidity, if all fresh primary lesions

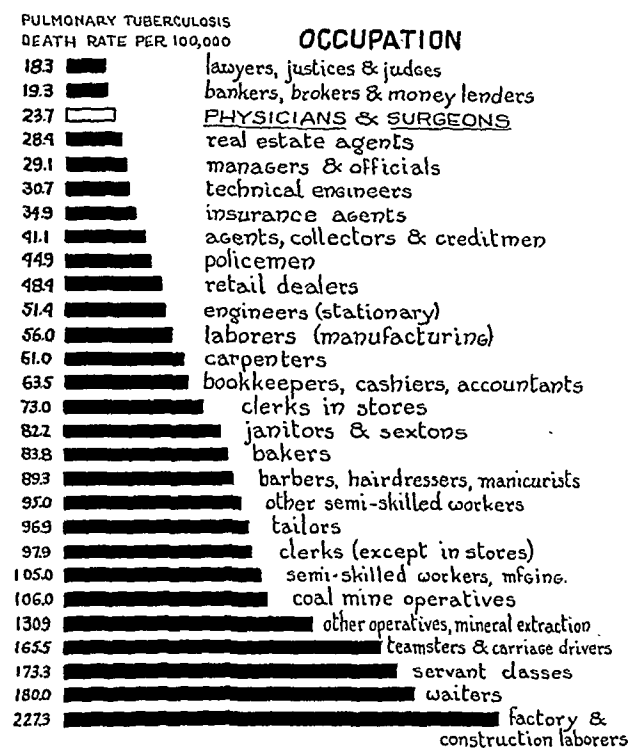


Chart 2.—Pulmonary tuberculosis: 1930 death rates in males from 16 to 64 years of age; death rates standardized according to age distribution of gainfully occupied males in ten selected states (Alabama, Connecticut, Illinois, Kansas, Massachusetts, Minnesota, New Jersey, New York, Ohio and Wisconsin).

of the lung are included. Some student nurses reach the age of enrolment without having acquired the primary lesion of tuberculosis. These nurses may acquire these lesions during the training period. It is for this reason that a case finding program increases the number of lung shadows found in this group more than in any other group in a hospital. However, one may wish to compare the incidence of all new lung shadows. If so, student nurses must be compared with other groups of young women from a similar social-economic class and similarly drawn from both urban and rural districts—for example, college students, among whom the annual incidence is 7.5 per thousand.

The reports from different hospitals vary but they show that from 30 to 66 per cent of nurses are negative on beginning their training and that more than 90 per cent are positive at the end of the three year training

period. Amberson and Riggins¹² found that 47 per cent of the nurses at the largest of the five training schools here reported give negative reactions to tuberculin on enrolment. Heimbeck⁷ found that 52 per cent and Badger and Spink¹³ that 44 per cent of the nurses gave negative reactions. That the roentgen shadows discovered are chiefly those of primary tuberculosis is shown by the fact that in Badger and Spink's series only one of 162 nurses positive on enrolment but seven of 111 negative on enrolment showed a lung shadow. Amberson and Riggins found two nurses with tuberculosis among the 150 who were positive and six among the 143 who were negative on enrolment. Heimbeck found only three nurses with tuberculosis among 200 who were positive and forty-eight among 220 who were originally negative. Of the twenty-two student nurses here reported on, whose roentgenograms showed parenchymal lesions, seventeen were negative reactors, three were positive reactors and two gave uncertain reactions.

In general, the incidence of lesions on roentgenograms is six times as high among students negative on enrolment as among positive reactors. It appears significant that the incidence of reported tuberculosis among college students under roentgenologic case finding and students not under a case finding program also shows a proportion of 6 to 1. Considering only the positive reactors among the student nurses, the incidence of tuberculosis is no higher, in fact it is lower, than that of the same age group in the general population in which no case finding examinations are made. Most adults will probably acquire the primary infection some time during the first decade of residence in the city. The evidence indicates that pupil nurses will acquire it more quickly, probably within the three year training period.¹⁴

Until now I have not referred to the well known, dreadfully high incidence of pulmonary tuberculosis among Negroes. Chart 1 indicates what must be expected among young Negro women—a rate three times as high as is exhibited by white women. One of the five training schools included in this report is the Harlem Hospital Nurses Training School, where 250 Negro student nurses have been under observation for periods varying from a few months to three years.

If it is true that a roentgenologic case finding program uncovers many primary transient lesions, one can expect that high incidence of tuberculosis among young Negro women will affect our studies of pulmonary lesions among these student nurses in two opposite ways:

1. A higher incidence of clinical secondary tuberculosis is expected because women of that age and race generally have a high incidence.

2. Most of the Negro nurse matriculants, having been born and having grown up among people where tuberculosis is so common, will have acquired a primary infection long before reaching the age of enrolment. A fresh primary lesion of tuberculosis will therefore seldom be found to increase the incidence figures. Because of this one expects a lower reported incidence.

Which of these two factors will predominate? Should a higher incidence be expected because of race or should a lower incidence be expected because there will be a few primary infections of tuberculosis? It

12. Amberson, J. B., and Riggins, H. M.: Tuberculosis Among Student Nurses, *Ann. Int. Med.* 10:156-165 (Aug.) 1936.

13. Badger, T. L., and Spink, W. W.: First Infection Type of Tuberculosis in Adults, *New England J. Med.* 217:424-431 (Sept. 9) 1937.

14. Boynton, Ruth E.: The Incidence of Tuberculous Infection in Student Nurses, *Am. Rev. Tuberc.* 39:670-674 (May) 1939.

11. Myers, J. A.; Ch'iu, P. T. Y., and Streukens, T. L., Jr.: Primary Infection in Adults, *Am. Rev. Tuberc.* 39:232-235 (Feb.) 1939.

is an interesting speculation; I hope that the reader will make his guess before reading further.

Each of these Negro pupil nurses serves for a few weeks in a tuberculosis sanatorium. At the Harlem Hospital most of the patients are Negroes. This is an institution for acute conditions where serious injuries and other surgical emergencies require prompt attention; where acute cardiac decompensation, pneumonia and other medical emergencies are the normal routine. Here patients must be cared for and treated for the acute conditions without an attempt being made to diagnose preexisting ailments such as tuberculosis. It is only after the patient begins to recover from his acute condition or at the postmortem examination that the physician becomes aware of the presence of active pulmonary tuberculosis. I know of no institution where nurses are more exposed to tuberculosis. Nevertheless, in this institution there is no tuberculosis among the pupil nurses. The incidence of pulmonary tuberculosis among the Negro student nurses over a period of three and a half years is zero—not a single case was found. I am fully aware of the fact that the absolute zero is an accidental finding for, of course, there will eventually be found some cases of clinical tuberculosis as the years go by, but it is strong evidence that much of what is being found among white student nurses is not the beginning of clinical tuberculosis, not the activation of older lesions, not exogenous reinfections but rather a large number of primary lesions.

This number of Negro nurses is small and three and a half years is a brief period of observation; nevertheless the results dramatize this paradox of reported incidence of tuberculosis with a periodic roentgenographic case finding program after a first healthy chest film; the higher the incidence of tuberculosis among the people from which a group of adults comes, the lower the incidence of new lung shadows discovered. The incidence of clinical tuberculosis, which becomes manifest without a roentgenologic case finding method, shows no such paradox.

The knowledge that certain persons have the shadows of primary pulmonary lesions is of importance solely from the standpoint of epidemiologic studies. For the individual it is better if he never knows that this transient pulmonary lesion existed. But few of us who have had such a transient lesion ever knew about it and we are happier because of our ignorance. On the other hand, it is of the utmost importance to the individual as well as to the community—from the standpoint both of treatment and of prevention of spread of the disease—that the early lesion of clinical tuberculosis be assiduously sought. Diagnostic differentiation is difficult, often impossible, and outside the scope of this paper.

I hope that the evidence presented in this paper has made it clear that clinical tuberculosis does not develop in interns, graduate nurses and other members of the hospital personnel which would not, with equal probability, have developed in some other occupation. There is abundant evidence, however, that student nurses who come to the hospital tuberculin negative acquire the primary infection within three years (the training period) in greater numbers than is the case in other occupations.¹⁴ The question then is Does this acquisition of the primary infection at about the age of 20 produce more tuberculosis in later life? Obviously, if one had never received any infection one could never get the disease. Infection in infancy is a factor in the development of disease in women in their twenties and

in men in their thirties and forties. What is the ultimate clinical result when young women acquire their first infection of tuberculosis in hospitals? I have shown, and it is generally agreed, that graduate nurses do not have a high tuberculosis morbidity in later life.

There are no reliable morbidity estimates for physicians. If exposure in hospitals increases the morbidity of clinical tuberculosis later in life, there should be an increased mortality from tuberculosis among nurses and physicians. There are no reliable mortality estimates for nurses, but Whitney¹⁵ has made available data on death rates among physicians. Chart 2 shows death rates from tuberculosis among physicians compared with other occupational groups. The mortality of physicians from tuberculosis is among the lowest. In spite of the theoretical possibilities, one must accept the fact that the group most exposed to tuberculosis in adult life, namely the physicians, does not have any more fatal tuberculosis than others of the same social-economic class. Whatever may be the reason for the high mortality among some of the social-economic groups, occupational contact in adult life with tuberculous patients is certainly not a factor.

SUMMARY

1. The incidence of tuberculosis among hospital personnel is about the same as that in any similar group.
2. Student nurses are the exception because they make up the one hospital group that includes a large number of tuberculin negative individuals. Some of these, on acquiring the primary infection, will show lung shadows and thus raise the incidence. Because most of these lesions never present any symptoms, this is true only if roentgenographic case finding methods are used.
3. A student nurse who is tuberculin negative is more likely to acquire the primary infection than adults in other occupations.

CONCLUSION

Occupational exposure to tuberculosis does not increase tuberculosis morbidity or mortality of hospital personnel except among tuberculin negative student nurses.

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ABSTRACT OF DISCUSSION

DR. C. D. SELBY, Detroit: I draw two primary conclusions from Dr. Brahdý's work: (1) that roentgenologic studies are desirable, if not essential, in case finding and (2) that exposure in relation to occupation has little influence on the incidence of tuberculosis. These conclusions suggest three collateral points for brief discussion, somewhat divergent from Dr. Brahdý's theme but of practical importance. The first is case finding methods. It has been demonstrated in making x-ray studies of applicants for employment as well as of employed groups that there are about four cases of active tuberculosis per thousand, and something like twelve to eighteen arrested cases or cases that might be classified as "all others." The patients with active involvement, of course, are unemployable. What they need is treatment, not employment. The others may be employed under medical supervision in suitable occupations. There is no question that the x-ray study, whether by the fluoroscope or by the flat plate method, is essential in early case finding. The second point is the relation of occupation, if any, to tuberculosis. The trends of compensation are toward recognition of occupational environmental conditions as being capable of aggravating preexisting tuberculosis, and awards are

15. Whitney, Jessamine S.: *Death Rates by Occupation, Based on the Data of the United States Census Bureau, 1930*, New York, National Tuberculosis Association, 1934.

being made in various states on that basis. This stimulates the employer to project case finding campaigns among his employees, which is desirable. This section is made up chiefly of health officers with a sprinkling of industrial physicians. In following out Dr. Brahdý's suggestion, using roentgenographic methods for case finding in industry and obtaining support for this in the trend of compensation authorities to recognize the aggravation of tuberculosis as compensable, there is one thing to do, and that is for the public health authorities to unite with industrial medicine in active case finding campaigns.

DR. HAROLD S. DIEHL, Minneapolis: Dr. Brahdý's paper is to me both reassuring and disturbing. It is reassuring to know that as dean of a medical school I need not feel responsible for any undue mortality from tuberculosis among the young men and women who become infected with tuberculosis while they are students in our schools of medicine and of nursing. At the same time I am seriously concerned for fear that this presentation may give rise to a false security and to a disregard of the hazard of the patient with open, active tuberculosis. Dr. Brahdý's data indicate that the mortality rate from tuberculosis among physicians and nurses is not excessive in comparison with the rest of the population. This, however, takes no account of the years of complete or partial disability, the modified lives, the changed careers which many physicians and nurses undergo because of this disease. Physicians and nurses who contract tuberculosis usually receive the best of medical care, and the result is a low mortality; but what about the morbidity? Dr. Brahdý has spoken about this also but on this point his conclusions are at variance with those of practically every one who has seriously studied this question. Heimbeck reports that, of 280 students in nursing who became positive to the tuberculin test while under his observation, two died from tuberculous meningitis, thirteen contracted pulmonary tuberculosis and eighty-one showed evidence of less serious forms of tuberculosis. This is a terrific morbidity rate, which certainly does not hold for the general population. In the May issue of the *American Review of Tuberculosis*, Boynton reports that, computed on a three months interval, the infection rate with tuberculosis, as indicated by a change from a negative to a positive tuberculin test, is about a hundred times as great among student nurses in a general hospital service as among students in a college of education on the same campus and that the infection rate among student nurses in a special tuberculosis service is five times that of nurses in the general hospital service. Few of these nurses develop clinical tuberculosis, but some of them do, and all of them have taken living virulent tubercle bacilli into their bodies. Can there be any doubt that this constitutes a hazard? Tuberculosis is a communicable disease. Any source of dissemination of a communicable disease is a danger to those exposed, unless they have been immunized. There is as yet no generally accepted means of immunization against tuberculosis; hence one must continue to consider the patient with open tuberculosis a hazard to others.

DR. CAMILLE KERESZTURI, New York: It is true for practically all infectious diseases that, if the infection rate is high in the population, the morbidity rate is high too. If the morbidity rate is high, unless the infection is very benign, mild and nonvirulent, the mortality rate must be high also. I do not see why the tuberculosis problem of hospital employees should be an exception to this general rule. Being a pediatrician, I see a great amount of primary tuberculosis and I do not consider it an entirely benign disease. Primary tuberculosis, at least in children, produces more hematogenous spread than any other type. Acute miliary tuberculosis and tuberculous meningitis originate more often from primary tuberculosis than from secondary and tertiary types. Therefore to me it seems unexpected that Brahdý finds a higher infection rate without higher morbidity or mortality rates among hospital employees than among other professions. I cannot resist stressing a point about case finding. Somehow it is not sufficiently emphasized that in the United States the general population manifests a positive tuberculin test in only about 30 per cent of the cases. Therefore I think it is uneconomical to roentgenograph every person in a survey without eliminating

the two thirds of the group who are tuberculin negative and for practical purposes do not need any chest roentgenogram. On the other hand, tuberculin tests should be repeated once or twice a year on the negative reactors for the simple reason that freshly infected persons need medical assistance as soon as possible after they are infected.

DR. OSCAR O. MILLER, Louisville, Ky.: Dr. Brahdý has made a remarkable contribution to the epidemiology of tuberculosis. Any one who has had any experience along similar lines would draw similar conclusions. In Louisville we have been testing the nurses in City Hospital for the past seven years, and the only persons who have contracted clinical tuberculosis have been in the groups who were tuberculin negative on entrance. All the nurses have had an x-ray film of the chest. Not infrequently one will find a person with a negative tuberculin test and an x-ray examination showing Ghon's primary tubercle. One must infer that a primary tubercle may confer relative immunity without allergy. I did not conclude from Dr. Brahdý's paper that one should not exercise ordinary care among nurses and medical students to prevent massive infection. It is admitted that the men who come in with a negative tuberculin test do run a hazard of a massive infection. Some one might conclude that, since nurses with positive tuberculin tests did not break down with active tuberculosis, they might show a delayed reactivation of the lesion. We used a follow-up method and were in communication with the nurses after they had graduated. All of those replying had remained well and showed no evidence of loss of well-being. Recently there has appeared in the literature a statement that tuberculous infection is a dangerous thing, and yet the figures submitted for the group discussed showed 15 per cent of the children developing clinical tuberculosis and 85 per cent of them remaining essentially well; the authors failed to stress the point that those children were living in contact with open tuberculosis and inevitably received a massive infection.

DR. LEOPOLD BRAHDY, New York: Dr. Selby states that he doesn't believe any one objects to x-ray case finding. I'm sure that no one does. It is invaluable in the antituberculosis campaign. Dr. Diehl's comments are important, for he has had extensive experience in this field. He mentioned the high rate of primary infection. There is no doubt that the rate of change from tuberculin negative to tuberculin positive is higher among nurses and interns than in any other group. He asks "Does any one deny that taking the virulent tubercle bacilli into the body is a hazard?" That is not to be decided by speculation but by study of what happens in later life to those who passed through the primary infection in early adult life without any clinical illness. If there is no greater incidence of tuberculosis among them, if the mortality is not greater, one can say that it is not a hazard. As to whether nurses and physicians receive better treatment, that may be; but physicians are not renowned for the eagerness with which they seek annual x-ray examinations for themselves; they are thus deprived of the most important factor in good treatment, namely early treatment. Dr. Diehl emphasized the seriousness of the modified life and the tragic necessity for changed careers of nurses and others who have clinical tuberculosis. Unless it is recognized that some of these young people with roentgenograms showing tuberculosis have no important lesion and should not change their lives and their careers, physicians are neglecting their functions. To Dr. Kereszturi the response is similar. She said that if the primary infection rate is high the mortality rate must be high. But the mortality rate is not high. The conclusion should be based not on assumptions but on the actual mortality and morbidity rates. Dr. Kereszturi speaks of the course of primary infections in children. I do not know enough about children to concur or to dissent. It is interesting and important, but the question in this paper is Does the primary infection in adults produce disease? No one assumes that an adult who has never had scarlet fever undergoes a serious hazard on exposure to scarlet fever, even though he takes virulent germs into the body, merely by analogy to the fact that a child similarly exposed will probably contract the disease. The conclusion must be based on data of adults contracting the clinical disease, not allergy, after exposure in adult life.

THE CONTROL OF HYPOPROTEINEMIA
IN SURGICAL PATIENTS

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ALFRED STENGEL JR., M.D.

AND

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The surgeon has become increasingly concerned with the nutrition of the surgical patient since it has been shown that a variety of lesions complicating operations are the result of nutritional disturbances. Jones, Eaton and White¹ and Mecray, Barden, Ravdin and their associates² have called attention to the hazards resulting from hypoproteinemia in patients subjected to operation. As the serum protein level is reduced in a dog with an intact stomach by diet and plasmapheresis the gastric emptying time of a water-barium meal is prolonged (fig. 1). Hypoproteinemia in man may so accentuate the edema around the stoma of a newly formed gastro-enteric anastomosis as to mimic in every way a technical defect of the anastomosis (figs. 2, 3, 4 and 5). In this condition there occurs also a marked delay in the passage of a bolus through the small intestine.³ The studies of Thompson, Ravdin, Rhoads and Frank⁴ have shown that hypoproteinemia may be an important factor in the failure of wounds to heal.

Observations which we have made on hypoproteinemic animals and human beings led us to investigate the methods by which hypoproteinemia could be corrected prior to operation and controlled afterward. In these studies we have investigated the effect of diet, the intravenous administration of amino acid mixtures, the jejunal and rectal administration of a peptone hydrolysate and the intravenous injection of serum, either in the normal state or after lyophilization and regeneration. Our experiences with these methods and preparations have led us to certain conclusions which justify a report.

METHODS

Diet.—A high carbohydrate-high protein diet given by mouth is the most satisfactory means of supplying the nutritional requirements of the surgical patient. Whenever possible we have used this. However, it is frequently impossible to get the patient to take sufficient calories prior to operation, either because of anorexia or because of pain or obstruction, and the very nature of the surgical procedure often precludes the oral intake of food for a period afterward.

Not only is the oral route most effective for supplying carbohydrate, protein and fat for energy require-

ments, storage and tissue regeneration, but it is the best one available for the introduction of the necessary accessory foodstuffs, the vitamins. From the standpoint of their effect on gastrointestinal activity the vitamin B complex is probably the most important group. A subclinical or clinical deficiency of the vitamin B complex exists in many of the patients coming to the surgeon with gastrointestinal lesions. When it has not been possible to give a yeast concentrate by mouth, we have used crystalline thiamin chloride subcutaneously. Several components of the vitamin B complex can now be given parenterally, but preferably yeast concentrate should be used by mouth since the administration of the components available for parenteral use does not cause a complete return of normal gastrointestinal motility and pattern.

The diet which we have found most satisfactory contains approximately 70 to 80 per cent of carbohydrate, 20 to 30 per cent of protein and 5 to 10 per cent of fat. It is important to remember that while in many surgical patients the deficiency in the reserve protein stores of the body and that in the serum protein may

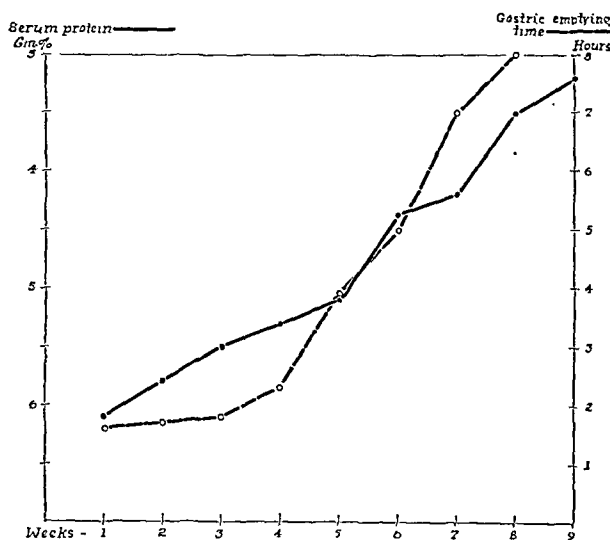


Fig. 1.—Relation of serum protein concentration to gastric emptying time.

not be equally severe, a serious deficiency in the reserve stores may and does often coexist with a serious shortage in the serum protein. The diet should, if possible, be given in amounts adequate to maintain energy requirements and at the same time provide for tissue regeneration. There can be no doubt that the oral route can be used more frequently than it now is.

CASE 1.—M. W., a white woman aged 60, whose condition was diagnosed as gastric ulcer and hyperthyroidism, demonstrated the fact that in certain patients hypoproteinemia can be corrected by a high carbohydrate-high protein diet alone.

Because of pain she restricted her diet, which at best was low in protein. As a result of this a severe protein deficiency developed, and she had lost nearly 30 pounds (14 Kg.) in weight. The level of serum proteins on Dec. 14, 1937, was 5 Gm. per hundred cubic centimeters, and the patient was at this time edematous. She was put on a high protein-high carbohydrate diet and by Jan. 3, 1938, the serum protein level had risen to 5.4 Gm. per hundred cubic centimeters; she had gained nearly 10 pounds (4.5 Kg.) and the edema was subsiding. Several weeks later, the serum proteins had risen to 6.4 Gm. per hundred cubic centimeters and all traces of edema had disappeared. Within five weeks the patient had regained her normal weight and had no ulcer symptoms. She was then subjected to subtotal thyroidectomy.

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From the Harrison Department of Surgical Research and the Surgical Clinic of the Hospital of the University of Pennsylvania.

Read before the Section on Surgery, General and Abdominal, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. Jones, C. M., and Eaton, F. B.: Postoperative Nutritional Edema, *Arch. Surg.* **27**: 159 (July) 1933. Jones, C. M.; Eaton, F. B., and White, J. C.: Experimental Postoperative Edema, *Arch. Int. Med.* **53**: 649 (May) 1934.

2. Ravdin, I. S.: Factors Involved in the Retardation of Gastric Emptying After Gastric Operations, *Pennsylvania M. J.* **41**: 695 (May) 1938. Barden, R. P.; Ravdin, I. S., and Frazier, W. D.: Hypoproteinemia as a Factor in the Retardation of Gastric Emptying After Operations of the Billroth I or II Types, *Am. J. Roentgenol.* **35**: 196 (July) 1937. Jones, Eaton and White.¹ Mecray, Barden and Ravdin.² Barden and others.³

3. Barden, R. P.; Thompson, W. D.; Ravdin, I. S., and Frank, I. L.: The Influence of the Serum Protein on the Motility of the Small Intestine, *Surg., Gynec. & Obst.* **66**: 819 (May) 1938.

4. Thompson, W. D.; Ravdin, I. S., and Frank, I. L.: Effect of Hypoproteinemia on Wound Disruption, *Arch. Surg.* **36**: 500 (March) 1938. Thompson, W. D.; Ravdin, I. S.; Rhoads, J. E., and Frank, I. L.: Use of Lyophilic Plasma in Correction of Hypoproteinemia and Prevention of Wound Disruption, *ibid.* **36**: 509 (March) 1938.

Intravenous Amino Acids.—The amino acid solution which we have used was prepared by the acid hydrolysis of casein and was obtained from Frederick Stearns & Co. The first solutions used in the human being were not fortified with tryptophan or cystine. We have obtained no evidence that depleted serum protein stores were replenished by the use of this material even when given by a continuous intravenous drip over a period of nearly two weeks. More recently an amino acid mixture fortified with tryptophan and cystine has been used. With such a solution a small increase in the serum protein level has been obtained during a five day period in which a basal ration was taken by mouth.

We have studied the effect of continuous intravenous administration of a similar amino acid mixture, also fortified with tryptophan and cystine, in the restoration of a reduced serum protein level in dogs whose labile protein stores had been reduced nearly to the zero point by diet and plasmapheresis. In the occasional animal a positive nitrogen balance has been obtained, and we have some evidence that the serum protein concentration has been at times slightly increased when the mixture was administered continuously for from five to seven days and when sufficient dextrose was added to satisfy the major caloric requirements of the animal.

While this method of therapy may hold promise for the future, it is our feeling that at this time com-

Blood drawn into sterile containers from typed donors with a negative Kahn reaction was centrifuged so as to separate the serum from the cells. The sterile serum was lyophilized for us through the kindness of Dr. John Reichel, of Sharp & Dohme. After lyophilization the residues were stored in the refrigerator until

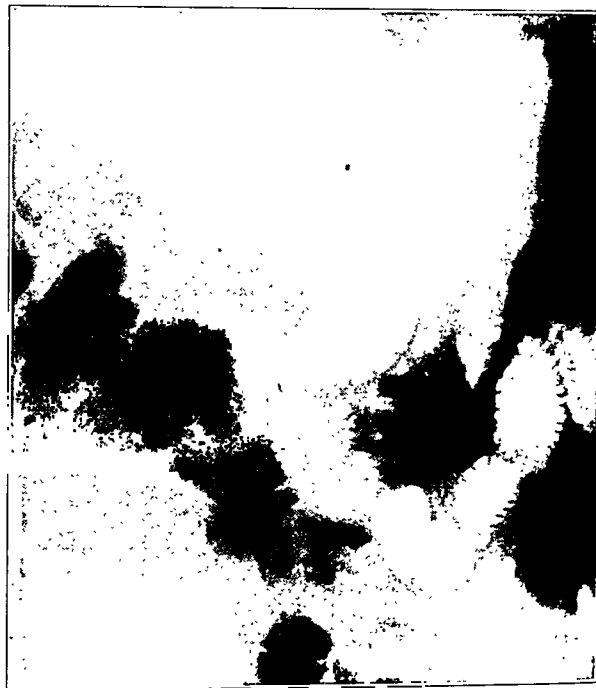


Fig. 3.—The patient shown in figure 2 ten days later, one-half hour after a water-barium sulfate meal. Serum protein concentration is normal.



Fig. 2.—Gastric retention in a hypoproteinemic patient nineteen days after a pylorectomy and twenty-four hours after a water-barium sulfate meal.

plete dependence on the amino acid mixtures available for clinical use is hardly warranted, especially when both the protein stores and the serum protein have been markedly depleted.

Lyophile or Normal Serum.—The lyophile serum was prepared by the method of Florsdorf and Mudd.⁵

5. Florsdorf, E. W., and Mudd, Stuart: Procedure and Apparatus for Preservation in "Lyophile" Form of Serum and Other Biological Substances, *J. Immunol.* 29: 389 (Nov.) 1935.

required, at which time they were regenerated to hypertonic or normal concentrations by the addition of sterile water. The regenerated serum has been administered intravenously by the drip method.

That this method is efficacious for temporarily elevating the serum protein can be seen in figure 6. It is important to give the regenerated serum slowly. Even when it was given in this manner there have been some very annoying reactions characterized by chills and fever with their associated phenomena. Until the cause of these reactions is ascertained, lyophile serum will have a limited usefulness.

For a number of patients we have used repeated blood transfusions or, if the cell count was normal, normal serum alone. Both of these materials are at times very helpful and can be utilized more frequently than they now are.

Peptone Hydrolysate.—As our studies have progressed we have become increasingly convinced that at present the most efficacious method of meeting the protein requirements of the patient is some type of alimentary feeding. A completely satisfactory method would in addition provide carbohydrate, fat, salt and sufficient fluid to obviate the simultaneous administration of fluids and salt by parenteral routes. We believe that these requirements can be met for most patients by the orojejunal feeding method which Stengel and Ravdin⁶ have recently described (fig. 7).

A few patients have been fed by this method prior to operation, when sufficient calories were not being ingested and no obstruction to the passage of the feed-

6. Stengel, Alfred, Jr., and Ravdin, I. S.: The Maintenance of Nutrition in Surgical Patients with a Description of the Orojejunal Method of Feeding, *Surgery* 6: 511 (Oct.) 1939.

ing tube existed. Occasionally edema around the pylorus so accentuated a cicatricial stenosis or a malignant obstruction as to result in nearly complete pyloric obstruction. In such instances siphon drainage of the stomach for a few days, as suggested by Graham,⁷ and one or two transfusions of blood or serum often result in subsidence of the edema; the feeding tube then passes into the small bowel. We have used the special Abbott tube (fig. 8) or the Levine tube for this purpose.

When the orojejunal method was to be used after operation the tube was passed into the stomach before operation and through the stoma into the jejunum at the completion of the gastro-enteric anastomosis.

The peptone hydrolysate used for orojejunal feeding is a peptic-tryptic digest of beef peptone. It was first prepared for us by Dr. David L. Drabkin, of the Department of Physiological Chemistry of the School of Medicine of the University of Pennsylvania, but has more recently been supplied by Merck & Co. It gives a strong biuret reaction. The ratio of total nitrogen to amino nitrogen of the material was about 2 to 1. The hydrolysate is put into solution by placing a weighed amount in boiling water, constantly stirring the material as it goes into solution. Concentrations of protein in the solution calculated on the basis of total nitrogen varied from 4 to 10 per cent. To this solution we have added varying amounts of dextrose, sodium chloride and at times olive oil. Feeding in the

to maintain a normal level of the plasma chlorides and a normal fluid volume.

We have used the orojejunal method in more than twenty cases, some of which have been reported elsewhere.⁶ The following brief case report shows the results which may be obtained by this method.



Fig. 5.—The patient shown in figure 4 three days later, forty minutes after the administration of a water-barium sulfate meal. Serum protein concentration is normal.



Fig. 4.—Gastric retention in a hypoproteinemic patient eighteen days after a pylorectomy and twenty hours after a water-barium sulfate meal.

human being has been maintained by a modification of the apparatus devised by Stengel and Vars.⁸

As a rule from 65 to 90 Gm. of protein and from 200 to 300 Gm. of dextrose were fed daily. In addition sufficient sodium chloride and water were added

CASE 2.—S. C., a white man aged 54, had a posterior gastro-jejunosomy Sept. 24, 1938, because of a benign duodenal ulcer with complete stenosis. The serum protein level just prior to operation was 6 Gm. per hundred cubic centimeters. On the day following operation it was 5 Gm. Peptone hydrolysate feeding by the orojejunal method was begun September 25. These feedings supplied the patient with an average of 65 Gm. of protein each twenty-four hours over a five day period. The protein was supplemented with from 90 to 220 Gm. of dextrose daily and with sufficient sodium chloride to maintain a normal plasma chloride level.

November 1 the serum proteins had risen to 7.5 Gm. per hundred cubic centimeters. Orojejunal feeding was then discontinued and the patient given food by mouth (fig. 9).

When the jejunal method was not possible we at times resorted to the rectal method of administration of the hydrolysate. That such protein-split products are absorbed in considerable amounts has been demonstrated by Rhoads, Stengel, Riegel, Cajori and Frazier⁹ in the dog and by us in man (fig. 10).

COMMENT

A considerable number of the patients coming to the surgeon for operation for gastrointestinal lesions have for some time prior to admission to the hospital received insufficient amounts of a diet suitable to maintain energy requirements. This is at times due to inability to eat enough food, at others to inability to

7. Graham, Roscoe R.: Technical Surgical Procedures for Gastric and Duodenal Ulcer, Surg., Gynec. & Obst. 66: 269 (Feb., No. 2A) 1938.
8. Stengel, Alfred, Jr., and Vars, H. M.: An Apparatus for Continuous Intravenous Injections in Unanesthetized Animals, J. Lab. & Clin. Med. 24: 525 (Feb.) 1939.

9. Rhoads, J. E.; Stengel, Alfred, Jr.; Riegel, Cecilia; Cajori, F. A., and Frazier, W. D.: The Absorption of Protein Split Products from Chronic Isolated Colon Loops, Am. J. Physiol. 125: 707, 1939.

retain the food eaten, and at others to the lack of a suitable combination of the essential foodstuffs. In addition to adequate amounts of carbohydrate, protein and fat the body stores of certain of the essential accessory foodstuffs, the vitamins, are often limited so that a clinical or subclinical deficiency of one or more may be present.

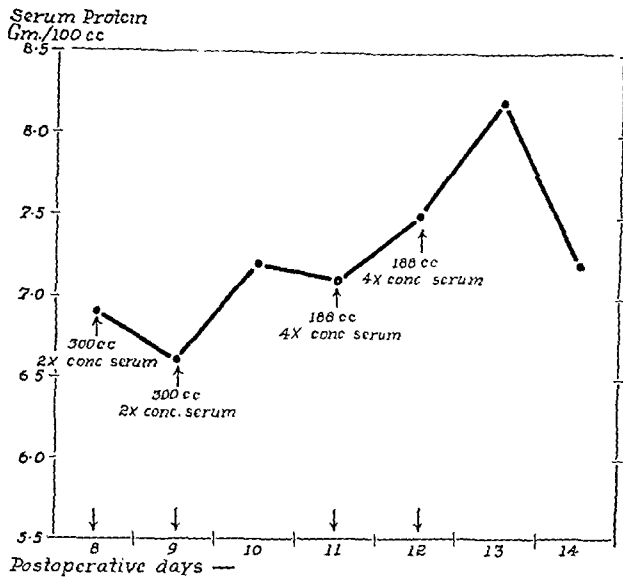


Fig. 6.—Intravenous injections of lyophile serum in a patient who had gastric resection for carcinoma.

Information recently made available strongly supports the idea that some degree of visceral protection can be afforded¹⁰ the patient during anesthesia, that wound healing will be better and that the convalescence and functional activity in gastrointestinal conditions will be smoother if attempts are made to supply an adequate dietary regimen for some days prior to operation and during the period of enforced gastric rest

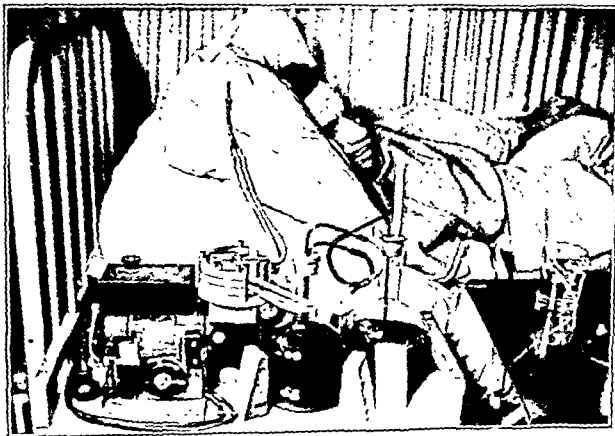


Fig. 7.—Patient being fed by the orojejunal method after a subtotal gastrectomy.

after operation. By one method or another we have attempted to do this.

When any existing dehydration is overcome the patients with nutritional deficits frequently have a serum protein concentration at or below the edema level. Subcutaneous edema is but an external mani-

festation of a widespread inability to keep fluids in the blood vessels. The edema which normally occurs as a result of trauma at the site of operation is greatly accentuated by the impairment of the physiologic mechanism for drawing excess amounts of fluid back into the vascular system. Such edema interferes with the normal emptying of the proximal portion of the gastrointestinal tract. The process which we have studied in the stomach probably exists also in the small and large bowel.

The emphasis which surgeons have placed on correcting dehydration and electrolyte losses before and after operation has often been accompanied by failure to consider the mechanism involved in keeping fluids in blood vessels. In the presence of hypoproteinemia fluids tend to leave the vessels, and the intravenous administration of large amounts of sodium chloride accentuates the process. We have more than once observed subcutaneous edema in patients receiving large amounts of sodium chloride whose serum protein concentration before the administration of fluid was above the accepted critical level of edema, a fact pointed out some time ago by Weech and Ling.¹¹ Proper

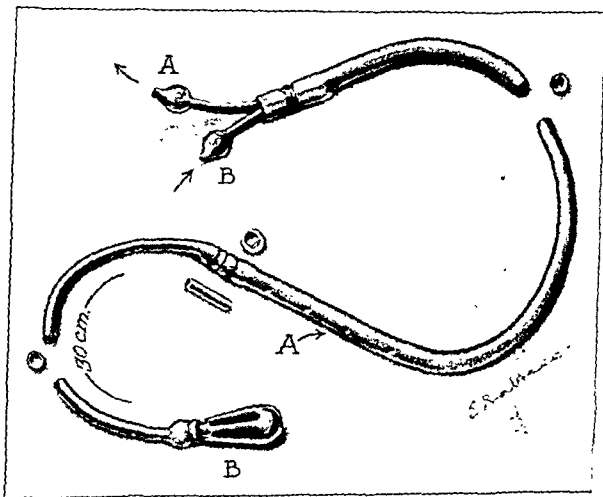


Fig. 8.—Special Abbott tube for orojejunal feeding and simultaneous suction drainage of the stomach.

control of fluid and electrolyte balance in surgical patients receiving parenteral fluids is not possible unless the serum protein concentration is maintained within early normal limits.

In the presence of edema at the new stoma the roentgenologist is unable to state whether the disturbance in emptying is the result of a technical error in the anastomosis or is due to a disturbance in the mechanism for keeping fluid in vessels. The roentgenologist is able merely to record whether the stoma functions or not.

The studies of Mecray, Barden and Ravdin¹² demonstrated that, when hypoproteinemia with resultant edema was the sole factor in the retardation of gastric emptying, hyperperistalsis was observed in the gastric fluoroscopic study. Subsequent observations made in our laboratories demonstrate that when hypoproteinemia and a vitamin B complex deficiency coexist the stomach is larger and more atonic and gastric peristalsis is less active or even absent.

11. Weech, A. A., and Ling, S. M.: Nutritional Edema: Observations on Relation of Serum Proteins to Occurrence of Edema and to Effect of Certain Inorganic Salts, *J. Clin. Investigation* 10: 869 (Oct.) 1931.
12. Mecray, P. M., Jr., Barden, R. P., and Ravdin, I. S.: Nutritional Edema: Its Effect on the Gastric Emptying Time Before and After Gastric Operations, *Surgery* 1: 53 (Jan.) 1937.

10. Goldschmidt, Samuel; Vars, H. M., and Ravdin, I. S.: The Influence of the Foodstuffs upon the Susceptibility of the Liver to Injury by Chloroform, and the Probable Mechanism of Their Action, *J. Clin. Investigation* 18: 277 (May) 1939.

Recently Heublein, Thompson and Scully¹³ have studied the gastrointestinal activity during vitamin B complex deficiency in dogs and have demonstrated a marked retardation of gastric emptying in animals which were not hypoproteinemic. The parenteral administration of thiamin chloride (vitamin B₁ hydrochloride) to such animals did not cause a complete return of normal gastrointestinal activity. Even the parenteral administration of thiamin chloride, riboflavin (B₂) and nicotinic acid did not result in a complete return to normal. A normal motility and pattern were restored only after the addition to the diet of large amounts of the vitamin B complex.

When the orojejunal method of feeding is not possible, the administration of a peptone hydrolysate by rectum offers a possible but less satisfactory method of maintaining the nutritional requirements of the patient. If, during the period of colonic feeding, dextrose is administered parenterally, the caloric intake is increased and in addition the patient's protein stores are at least in part protected. It is well known that the administration of dextrose to starving patients prevents to some extent the protein breakdown that occurs when no dextrose is administered. The patient whose duodenal fistula prevented the use of the oral or jejunal method illustrates the fact that the rectal method has greater possibilities than we have previously ascribed to it, and the data of Rhoads and his associates⁹ obtained from isolated loops of the colon of the dog substantiate our clinical observations.

The use of repeated blood transfusions or normal serum is an efficacious means of temporarily elevating

administration of amino acid mixtures. The investigations of Elman and Weiner¹⁴ offer hope that before long this method will be useful. At present, however, the data are not sufficiently convincing for us to conclude that this method should be used to the exclusion of more efficient procedures.

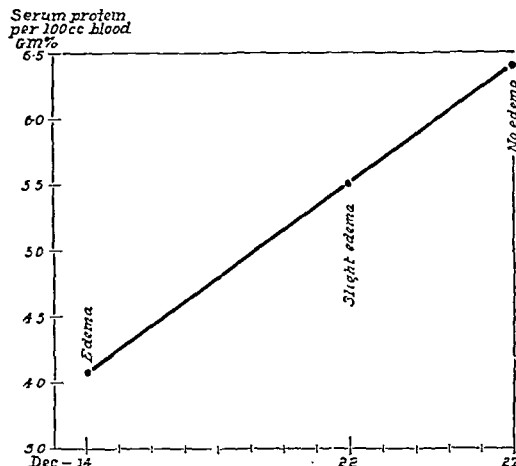


Fig. 10.—Changes in the serum protein concentration in a patient with a duodenal fistula during the rectal administration of a protein hydrolysate. No food was administered by mouth during the rectal feeding.

Whatever the method used the surgeon should, if possible, provide for the maintenance of the basal caloric requirements of the patient and for sufficient protein to permit restoration of depleted protein stores and a more normal serum protein concentration. The prevention of edema, the normal healing of wounds and the regeneration of injured tissues require the maintenance of normal, or the replenishment of depleted, serum protein and reserve stores of protein in the body. The patient whose reserve or labile stores of protein are depleted and whose serum protein concentration is at or below edema levels presents an increased hazard regardless of the technical skill of the operator.

ABSTRACT OF DISCUSSION

DR. CHESTER M. JONES, Boston: It is becoming increasingly obvious that the so-called poor risk patient is frequently subject to a high surgical mortality because of malnutrition, owing first to the disease itself and second to the necessary postoperative period of starvation. I am glad to have the authors' substantiation of clinical and experimental observations that I made six years ago. At that time I was struck by the occurrence of postoperative edema, which might complicate convalescence or even provide the underlying cause of death following surgical procedures, particularly those involving the gastrointestinal tract. Protein lack in these patients can be laid to several factors: insufficient intake, hemorrhage preceding operation, the increased metabolic demands associated with fever and sepsis, and protein loss by drainage and by the administration of too much fluid or sodium chloride preoperatively or postoperatively. Any or all of these factors may contribute to serious protein lack, with a resulting tendency to nutritional edema. Another important factor favoring edema at the operative site may be vitamin B complex deficiency, with resulting diminution in gastrointestinal motility. The authors mentioned poor healing of wounds in relation to hypoproteinemia. I should like to add lack of vitamin C as part of a general deficiency so frequently found in these patients, affecting particularly the healing of wounds. I have just completed some work showing definitely that in the first few postoperative days there is an increased demand for

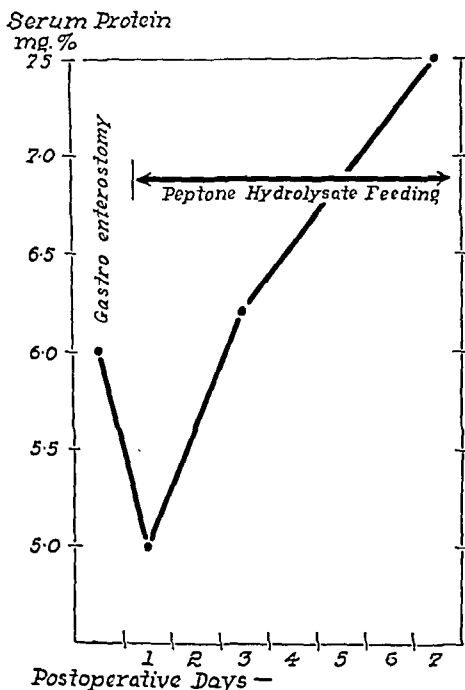


Fig. 9.—Effect of orojejunal feeding on the serum protein.

a reduced serum protein concentration. Hypertonic lyophile serum is even more efficacious, but its use is attended by a higher incidence of untoward reactions.

It may be possible to meet the requirements of the patient satisfactorily by the continuous intravenous

13. Heublein, G. W.; Thompson, W. D., and Scully, J. P.: The Effect of a B Complex Deficiency on Gastric Emptying and Small Intestinal Motility, to be published.

14. Elman, Robert, and Weiner, D. O.: Intravenous Alimentation, J. A. M. A. 112:796 (March 4) 1939.

vitamin C, resulting probably from the increased need for the laying down of collagen in healing tissue. Protein lack in these depleted patients therefore may properly be considered to be due to the loss of electrolytes, fluid administration, vitamin B and vitamin C deficiency and quite possibly vitamin K lack as well.

DR. ROBERT ELMAN, St. Louis: The pioneer clinical and experimental work of Dr. Ravdin and his associates has pointed out the importance of hypoproteinemia to the surgeon. Not so long ago hypochloremia was also shown to increase the mortality following surgical procedures. Both of these studies have shown how important biochemical thought is in the care of patients to be operated on. Surgeons are becoming aware more and more that many patients, even those that seem to be normal, are nutritionally depleted and that this depletion affects or may affect any of the nutritional elements. In the case of hypochloremia, the replacement of the deficiency is relatively easy. In the case of hypoproteinemia this replacement is rather difficult, as amply indicated by the observations reported by the authors. The reason is that hypoproteinemia is but one manifestation of severe nutritional depletion; not only is the serum protein depleted but tissue proteins elsewhere are also depleted and hormones are not being manufactured. Moreover, essential vitamins, not only the ones that are known but also those of the B complex, which are not yet known, may also be depleted. Many of these may be important in restoring the protein loss by synthesis from amino acids. I have found that transfusions in these severe cases, while helpful, are not sufficient to remedy the nutritionally depleted patient. We are dealing in these patients with the problem of serum protein regeneration. What we like to do is to have patients who can make serum protein and make it rapidly. One would think that a high protein diet in such a patient should be effective, yet with one of the patients of Dr. Ravdin and his co-workers it required several weeks on a high protein diet to raise the serum protein from a level of 5 to one of 6.4. Other patients were able to produce serum protein in a much shorter time. The differences are undoubtedly due to the complexity of the problem involved in the regeneration of serum protein. Serum protein is entirely different from most tissue proteins. Tissues absorb amino acids from the blood and manufacture protoplasm. Serum protein on the other hand may be looked on as a secretion; it must not only be manufactured but be secreted into the blood, and it is probable that many factors are necessary for this process.

DR. I. S. RAVDIN, Philadelphia: Dr. Elman has done pioneer work in the use of amino acid preparations in an attempt to raise the serum protein concentration of hypoproteinemic patients. I wish to stress that in attempting to maintain the fluid and electrolyte balance of our patients we have frequently forgotten that a normal serum protein concentration is necessary if injected fluids are to remain in the blood vessels. There is no such thing, in my opinion, as a definite critical level for edema. Edema depends on a number of factors which Dr. Jones discussed, and one of the most important from the standpoint of the surgical patient is the amount of salt that is administered. We have time and again seen edema in surgical patients to such an extent as to cause complete obstruction of a newly made gastric stoma, so that the roentgenologist reported that there was complete obstruction as the result of mechanical defect of the operation, when in reality what had happened was that the patient had edema which was conditioned by a low serum protein on the one hand and an increased amount of salt on the other. Unless one considers the salt and the fluid, and in addition to this the important component of the serum protein, one cannot properly maintain a fluid and electrolyte balance which will be most satisfactory for the surgical patient. Dr. Elman has pointed out that there is a close connection between the serum protein and the tissue protein. One cannot expect to get regeneration of the two in the same degree. There is evidence that when the tissue protein stores are greatly depleted these may be supplied first by any protein that is administered, and therefore the serum protein remains low over a period of time. Under such conditions normal or lyophilic serum would be the most satisfactory agent for use if a more physiologic state of gastrointestinal activity during and immediately after gastrointestinal operations is desired.

SYMPATHICOBLASTOMA

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AND

JOHN R. NORCROSS, M.D.

CHICAGO

Although tumors of the sympathetic nervous system are rarely encountered in the practice of orthopedic surgery, the cases presented in this paper show that they must be considered before making the final diagnosis of certain lesions of the spine. Owing to the vast distribution of sympathetic nervous tissue, one may find these neoplasms growing almost anywhere within the body and producing a great variety of symptoms. The neuropathologist and neurosurgeon probably see these cases more frequently than others. Occasionally the pediatrician, the internist and the abdominal surgeon encounter them. The urologist must always consider the possibility of tumors of the adrenal gland in differentiating certain lesions of the kidney.

Originally, tumors of the adrenal gland as well as other retroperitoneal tumors that were found in children were considered to be sarcomas. It was in 1864 that Virchow first thought that these tumors might be of nervous tissue origin. He thus classified this group as gliomas. In 1891 Marchand observed the similarity in histologic picture between the developing sympathetic nervous system and some of the adrenal tumors. He conceived the idea that perhaps these tumors were derived from neuroblasts. In 1901 Pepper reported a series of adrenal tumors with metastases to the liver. In 1907 Hutchison reported tumors of the adrenal gland with metastases to the skull. He considered them to be sarcomas.

Wright¹ in 1910 showed conclusively that the cells of these tumors, which were often associated with delicate fibrils, had the same morphology as the cells from which the sympathetic nervous system and the medulla of the adrenal develop. Thus Wright was really the first to devise a logical classification based on developmental relationships. Since Wright's work, different classifications of this group of tumors have been proposed by various authors such as Bailey and Cushing² and Scott and Palmer.³

By far the greater majority of the cases of this neoplasm that have been reported in the literature involve the medullary portion of the adrenal gland. Relatively few tumors have been reported as occurring in other parts of the body. Symmers⁴ has reported a tumor which apparently was a sympathicoblastoma arising from the scapular region. Stewart⁵ found one arising from the cervical sympathetics, while Anderson and Shennan⁶ have reported a tumor beginning in the thoracic cavity. Harbitz⁷ described the neoplasm anterior to the sacrum and closely related to the sympathetic system. Lambert⁸ gave an account of a tumor

Read before the Section on Orthopedic Surgery at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Wright, J. H.: *J. Exper. Med.* **12**: 556, 1910.
2. Bailey, Percival, and Cushing, Harvey: *A Classification of Tumors of the Glioma Group on a Histogenetic Basis*, Philadelphia, J. B. Lippincott Company, 1926.

3. Scott, Ernest, and Palmer, D. M.: *Am. J. Cancer* **16**: 903-917 (July) 1932.

4. Symmers, Douglas: *A Recurrent Neuroblastoma of the Scapular Region*, *J. A. M. A.* **60**: 337 (Feb. 1) 1913.

5. Stewart, M. J.: *J. Path. & Bact.* **23**: 119, 1919.

6. Anderson, J. S., and Shennan, T.: *J. Path. & Bact.* **26**: 545 (Oct.) 1923.

7. Harbitz, Francis: *Tumors of the Sympathetic Nervous System and the Medulla of the Adrenal Glands*, *Arch. Int. Med.* **16**: 312 (Aug.) 1915.

8. Lambert, R. A.: *Proc. New York Path. Soc.* **17**: 96, 1917.

which had its primary location in the retroperitoneal region with extensive metastases to the lymph glands and the osseous system but no involvement of the adrenals. Schultz⁹ reported a tumor which arose from the left abdominal sympathetic trunk. Ritter¹⁰ has reported two tumors both arising from the jejunum, presumably from nerve cells of the intestinal sympathetic plexus. Both of these were in adults. Cushing and Wollbach¹¹ reported a tumor in a 2 year old child which apparently arose in the region of an intervertebral foramen and had extended within the spinal canal as well as into the spinal muscles. Jacobsen and Hosoi¹² reported that in a 9 month old infant the primary tumor took origin in the skin or subcutaneum of the thigh. Scott and Palmer³ have reported an intrathoracic sympathicoblastoma. Stern and Newns¹³ have reported a series of twenty-five tumors, of which one was thoracic and the rest were abdominal.

A sympathicoblastoma is a completely undifferentiated malignant tumor which takes its origin from embryonal cells of the sympathetic nervous system. The parent cell of the sympathetic primordia is the sympathogonia. This is a completely undifferentiated spherical cell with a densely staining nucleus and little cytoplasm. This develops into a larger cell, the sympathoblast, which is polygonal and has a considerable amount of cytoplasm in which fibrils may be seen. The cytoplasm of these cells may be prolonged into filamentous processes. The sympathoblast is multipotential and migrates into the visceral areas to form the anlage of the sympathetic nervous system. It eventually may differentiate into the neurons of the sympathetic ganglions and into the chromaffin cells of the adrenal medulla. Tumors that are composed of embryonal cells in varying

degrees of maturity naturally would be difficult to classify accurately. The microscopic appearance of such tumors is dependent on the type of cell which predominates. If most of the cells are sympathogonia, the tissue may appear similar to that of a sarcoma, there being masses of densely packed round cells with little cytoplasm. Usually there are some sympathoblasts in the picture. These cells are usually associated with delicate

fibrils which at times are arranged in parallel bundles. One or more rows of these cells may be formed about a central mass of fine fibrils, forming the characteristic rosette.



Fig. 1 (case 1).—Sclerosis of the body of the ninth dorsal vertebra and absence of the pedicle shadows of the seventh, eighth and ninth dorsal vertebrae. There is some erosion of the eighth and ninth ribs on the right.

Owing to the fact that there are relatively few of these tumors that have been reported in the literature and because of the interesting problem in diagnosis that may arise, we report the following cases:

REPORT OF CASES

CASE 1.—C. A. S., a girl aged 18 months, was first seen at the orthopedic dispensary of Children's Memorial Hospital, Chicago, July 26, 1936. Her birth had been normal and she apparently was perfectly well during her early infancy. She learned to walk at 9½ months of age. When she was 10 months old she was vaccinated for smallpox. The vaccination did not take and a second vaccination was performed ten days after the first. She had a severe reaction following this, with a high fever and swelling and inflammation of the arm. From three to four days after the second vaccination the parents noted that the child was unable to walk or to sit up alone. The neurologic and pediatric consultants who saw her at this time made a diagnosis of paraplegia due to post-vaccinal encephalomyelitis.



Fig. 2 (case 1).—Large tumor mass extending into the lower part of the right thoracic cavity.

The child was brought to the orthopedic department eight months after the onset of the paralysis. The physical examination revealed the following significant data: The chest was symmetrical. An area of dullness to flatness was present at the base of the right lung with diminished breath sounds and expiratory rales overlying this area. The left lung was normal. The liver was palpable 3 cm. below the costal margin. The kidneys and spleen were not palpable. The bladder was distended to a level just above the umbilicus. The spine was straight with a rounded prominence in the region of the ninth dorsal vertebra. The upper extremities were normal. The lower extremities presented flaccid paralysis of all muscle groups. Pain and temperature sensation were absent from a level slightly above the umbilicus downward. There was normal sensation above this level. The abdominal, patellar and achilles reflexes were absent. There was no ankle clonus and no Babinski reflex. X-ray examination of the spine revealed marked sclerosis of the body of the ninth dorsal vertebra (fig. 1) with hypertrophy and sclerosis of the spinous process of this vertebra. The pedicle shadows of the seventh, eighth and ninth dorsal vertebrae were absent on both sides. The eighth and ninth ribs were definitely narrowed at their proximal ends. X-ray examination of the chest showed a large mass extending well into the right side (fig. 2).

A spinal puncture was done on July 28. A small amount of yellowish fluid was obtained. Quackenstedt's sign was positive. The cell count was 270 per cubic millimeter. The culture was negative. Blood pressure in the right arm was 118 systolic and 80 diastolic; in the left arm it was 115/80. Results of laboratory tests were negative.

It was felt that this patient probably had a tumor arising within the spinal canal which had extended through the intervertebral foramen into the right thoracic cavity. This deduction was largely based on the x-ray evidence of absence of the pedicle shadows and the erosion of the ribs with the presence of a mass in the right side of the chest. It was decided that a biopsy was indicated and on August 4 a tumor mass was found protruding between the spinous processes of the eighth and ninth dorsal vertebrae and also between the eighth and ninth

9. Schultz, O. T., in Abt, I. A.: *Pediatrics*, Philadelphia, W. B. Saunders Company, 1926, vol. 8, p. 744.

10. Ritter, S. A.: *Am. J. Path.* 1: 519 (Sept.) 1925.

11. Cushing, Harvey, and Wollbach, S. B.: *Am. J. Path.* 3: 203-216 (May) 1927.

12. Jacobsen, V. C., and Hosoi, Kiyoshi: *Am. J. Path.* 6: 427 (July) 1930.

13. Stern, R. O., and Newns, G. H.: *Arch. Dis. Childh.* 12: 267-290 (Oct.) 1937.

ribs on the right. The tumor appeared to be too extensive to warrant further surgical procedure at this time. Tissue removed for microscopic examination had cells characteristic of a sympathicoblastoma (fig. 3).

The patient was given roentgen therapy and after twelve treatments, which totaled 2,030 roentgens, marked progress was noted both clinically and by x-ray examination of the

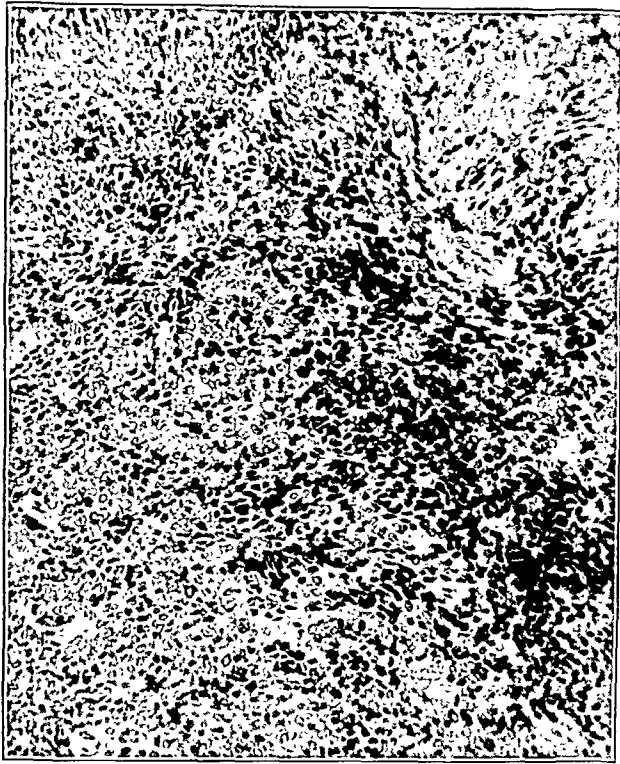


Fig. 3 (case 1).—Histologic preparation from biopsy material which contains both sympathogonia and sympathoblasts.

chest. The size of the tumor had decreased appreciably. However, the paralysis still persisted. On October 1 a spinal puncture was again performed and evidence of a block was present. A laminectomy was then done from the sixth to the eleventh dorsal vertebra in an effort to relieve any pressure that might be present. At this operation no gross evidence of the tumor could be found. The dura was markedly thickened and fibrosed in the area from the seventh to the ninth dorsal vertebra. Above the level of the seventh dorsal vertebra it had a normal appearance and pulsations were present. There was no pulsation below this level. The dura was incised longitudinally and the flow of spinal fluid along the cord was reestablished. A piece of tissue was removed from the area where the dura was particularly thickened. Microscopic section of this tissue revealed the presence of few tumor cells such as were characteristic of the tissue removed at the previous operation. There was considerable evidence of calcification in these sections. In other words, it appeared that the original tumor was highly sensitive to roentgen therapy but that the neoplasm had not been completely eradicated. A second series of roentgen treatments was given shortly after the operative wound was healed. This time the patient received a total of 1,400 roentgens. Since the laminectomy she had had no appreciable return of muscle power or sensation in the lower extremities.

For six months following the completion of the second series of roentgen treatments there was no evidence of recurrence of the tumor. There was evidence of regeneration of the eighth and ninth ribs on the right. In July 1937 x-ray examination revealed a recurrence of the tumor mass in the right side of the chest. A third series of roentgen treatments, with a total of 1,100 roentgens, was given. The tumor did not respond to the roentgen therapy as well this time as it did

on the other two occasions. The patient became progressively weaker as the mass continued to increase in size. On November 18 there was marked pulmonary edema and the child died of cardiac failure.

Postmortem examination revealed a large dumb-bell shaped tumor occupying both the right and the left thoracic cavity and extending from the sixth to the twelfth thoracic vertebra (fig. 4). The mass measured 4 by 7.5 cm. through its widest diameters. It completely encircled the inferior vena cava and the thoracic aorta, and portions extended along the intercostal spaces on the right from the sixth to the twelfth rib. The tumor was dull grayish and nodular, with a few hemorrhagic areas. On section the tumor was grayish white and friable.

The lungs showed marked metastases, the left lung being entirely composed of a bloody necrotic friable mass of tumor tissue. There was no other evidence of metastases, and the adrenal glands showed no abnormalities.

Microscopic examination of the tumor mass revealed two types of cells. One was a small round cell resembling a lymphocyte with a densely staining nucleus and only a small ring of cytoplasm and no processes; this was a sympathogonia. In some areas these cells were closely packed together in dense masses with little or no connective tissue separating them, looking much like small round cell sarcomas. The other type of cell was large and polygonal with a large amount of cytoplasm in which fine fibrils were seen. In many cells the cytoplasm was prolonged into short processes at one end. The nucleus was large and the chromatin finely divided, giving a vesicular appearance to the nucleus (sympathoblast). In a few areas these cells resembled adult ganglion cells. For the most part the two types of cells were intimately mixed, being arranged in closely packed areas with definite alveolar arrangement, the groups being separated by dense strands of fibrous tissues. In other areas they were loosely packed with



Fig. 4 (case 1).—Postmortem specimen showing a large dumb-bell type of tumor extending on each side of the spinal column and encircling the aorta and vena cava.

no orderly arrangement but with strands of connective tissue between the irregular masses of cells. In some areas definite pseudorosettes were seen with fine fibrillar material in their centers. A few of these rosettes were definitely perivascular in location. The most marked feature of the sections was the marked variation in size, shape and staining qualities of the cells. This picture is that of a sympathicoblastoma.

This patient had a tumor which took origin in the spinal canal and migrated through the intervertebral foramen into the thoracic cavity on both sides, forming a characteristic dumb-bell type. In the early stages the tumor responded rapidly to roentgen therapy. However, this treatment soon failed to control the growth, which is typical with these neoplasms

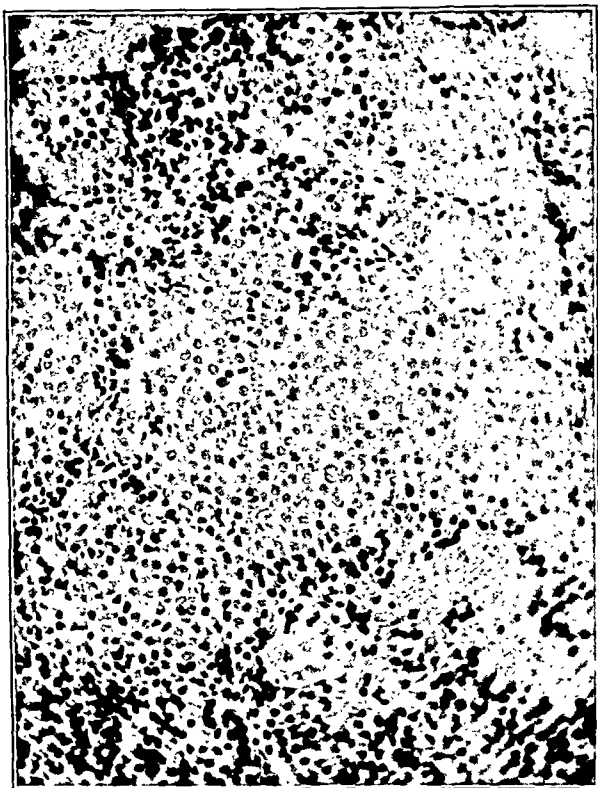


Fig. 5 (case 2).—Histologic preparation made from tumor found at operation. The sympathogonia and sympathoblasts are present in this section.

Through the courtesy of Drs. George W. Hall and Eric Oldberg, a second case is presented. This case also offers an interesting problem in diagnosis. In some respects it is similar to the first case, while in other ways there is a definite contrast between the two.

CASE 2.—Robert R., aged 9 years, entered St. Luke's Hospital on Nov. 5, 1936, because of paralysis and loss of sensation in both lower extremities. The patient had always been in good health until one month before admission to the hospital, at which time he began to have pain in the upper left part of the chest radiating down the left arm, and shortness of breath. One week after his initial symptoms appeared, he noticed a weakness of the musculature of both lower extremities. He apparently had little if any sensory disturbance at this time, and the family physician made a diagnosis of infantile paralysis. However, about one week later he had lost control of the vesical and rectal sphincters and had developed complete motor and sensory paralysis from the waist down. A diagnosis of spinal cord tumor was then made. Examination revealed the following abnormal features: Chest expansion was restricted on the left. Dulness was present over the anterior and posterior aspects of the chest on the left. Breath sounds were absent above the nipple line on the left. Hyperresonance was present over the entire right side of the chest. Heart tones were normal and borders within normal limits except that the heart was shifted to the right. The blood pressure was 110 systolic and 70 diastolic. The lower extremities were completely paralyzed, with a mild degree of spasticity. There was increase

in the deep reflexes, and the superficial reflexes were absent. The Babinski sign was negative. X-ray examination on admission revealed complete obliteration of the left thoracic cavity, the heart and mediastinal structures being displaced to the right. There was definite erosion of the third rib on the left, adjacent to the costovertebral junction. The pedicle shadows were all normal.

Laminectomy of the second, third and fourth dorsal vertebrae was performed on November 6. An extradural tumor was found within the canal. On removal of this mass, normal pulsations in the cord were reestablished below the level of the site of the tumor.

Histologic preparations made from the tumor showed large masses of cells arranged in groups around blood vessels (fig. 5). The cells were small and round with vesicular nuclei and little granular cytoplasm. In other sections these cells were so arranged as to resemble epithelium. The general type of cells present combined with their arrangement was sufficient to establish a diagnosis of sympathicoblastoma. Roentgen therapy was instituted.

On May 17, 1937, x-ray examination revealed marked regeneration of the third rib on the left, and the lung on that side appeared normal. The patient had regained control of his sphincters and there was some evidence of a return of sensation and muscle power in the lower extremities. The deep reflexes were still hyperactive and the Babinski sign was positive.

X-ray examination October 5 showed a broadening of the left third rib, with areas of both sclerosis and rarefaction. In the upper lobe of the left lung there was an area of increased density about the size of a half-dollar, apparently a recurrence of the tumor mass. The patient began having a daily elevation of temperature and complained of shooting pains in the upper extremities, particularly the left. The lower extremities remained spastic. The patient became progressively worse in spite of roentgen therapy. He died in March 1938. Unfortunately permission for autopsy was not obtained.

In this case the x-ray examination of the spine revealed normal pedicles as well as normal interpedicular spaces. Because of these observations it is thought that the tumor had a paravertebral origin in the region of the third rib on the left and migrated through the intervertebral foramen into the spinal canal. This is in marked contrast to the first case. The patient received seven courses of roentgen therapy totaling 10,100 roentgens, which gave only temporary relief, as in the preceding case.

CASE 3.—Ralph R., aged 6, entered the Children's Memorial Hospital on Aug. 6, 1937, because of pain in the left leg for one month, rather constant abdominal pain for three months and loss of 10 pounds (4.5 Kg.) in weight in three months. His birth was normal. His past history was irrelevant except for his having had whooping cough at 3 years of age. Examination yielded the following positive results: The neck showed definite limitation of motion on anteroposterior bending; it was freely movable on lateral bending. Kernig's sign was positive. There was slight tenderness in the suboccipital region. Chest expansion lagged on the right. Dulness was present over the right lung from the fourth rib to the base, both anteriorly



Fig. 6 (case 3).—Calcifications appear in the mass in the lower right part of the chest. The spine appears to be normal.

and posteriorly. There was slight diminution of breath sounds over this area. The abdomen was normal except for slight tenderness in the upper right quadrant. The extremities were normal except for limitation of internal rotation of both hips. The spine was straight; there was rounded fullness of the lumbar spine in the region of the second lumbar vertebra. There was distinct resistance to hyperextension. On x-ray examination the spine appeared to be normal. A dense shadow at the base of the right lung near the spine was suggestive of a lesion of intrathoracic origin, probably inflammatory in nature, located in the lower half of the mediastinum. The Mantoux test with a dilution of 1:10,000 was strongly positive. The patient had a daily low grade elevation of temperature. On November 27 he was sent home to be followed in the outpatient department. At that time a tentative diagnosis of tuberculoma of the mediastinum was made.

On Jan. 6, 1938, the patient was readmitted to the hospital because of definitely palpable cervical glands, headache and pain in the lower extremities. Examination showed essentially



Fig. 7 (case 3).—Histologic preparation made from biopsy material reveals the characteristic arrangement of the two types of cells. Several rosettes may be seen in this section.

normal conditions except for three discrete cervical glands on the left and several palpable inguinal glands. The lungs were resonant throughout. There were diminished breath sounds over the right side of the chest. The lumbar spine was rounded but was not suggestive of Pott's disease. Roentgenograms revealed no pathologic change of the spine but did show a large shadow in the posterior part of the mediastinum in which there were some irregular calcifications (fig. 6).

It was difficult to explain this mass on a tuberculous basis without pathologic evidence in the bones. It was suggested that it might be a mediastinal tumor, possibly of sympathetic tissue origin. A biopsy of the cervical glands was done on January 29. Histologic preparations made from these glands showed the presence of cells which appeared to be both sympathogonia and sympathoblasts, more or less intimately mixed (fig. 7). Masses of the sympathogonia, or round cells, were closely packed together. In other localities smaller groups of these cells were separated by strands of fibrous tissue. The general characteristics of the sections were definitely those of a sympathicoblastoma. Death occurred April 28. Autopsy was not permitted.

A fourth case which was observed is reported briefly:

CASE 4.—A. B., a 4½ year old girl, was admitted to the hospital on June 15, 1937, because of pain in the left lower extremity for six weeks, abdominal pain located about the umbilicus for three months and a daily elevation of the temperature of about 1 to 1.5 degrees for about three months. The past history was unimportant except for bronchitis three months and tonsillectomy about six weeks before entry. Examination showed systolic pressure of 130 and diastolic of 87. Otherwise observations were negative except for obliteration of lumbar lordosis and a definite psoas spasm on the left. The abdomen showed a definite palpable mass just to the left of the spine at the level of the second, third and fourth lumbar vertebrae. This mass was firm in consistency and smooth in outline and did not fluctuate. The upper and lower extremities were normal. There was no evidence of any nerve involvement. X-ray examination revealed no pathologic condition of the spine. The iliopsoas margin was clearly defined on the right but was not visualized on the left. The intravenous pyelogram showed a definite mass about 5 by 2 cm. overlying the left iliopsoas muscle, displacing the left kidney laterally. The Mantoux test with a dilution of 1:10,000 was negative, that with purified protein derivative No. 2 was positive. The urine was normal. No tubercle bacilli were found on guinea pig injection of urine. Blood counts were normal.

In view of these data it was thought that the patient had a retroperitoneal tumor rather than Pott's disease. An exploratory operation was recommended, but the child's parents refused to give their consent for this procedure. She was then taken home, where she was seen by numerous consultants.

The subsequent course of the child's condition was followed only by personal communication with the physician in charge of the case. In December a discrete cervical gland was palpable on the left. A biopsy of this gland was performed, and the histologic preparations made from this tissue revealed tumor cells characteristic of a sympathicoblastoma. There was no response to the therapy instituted, and death occurred several months later.

COMMENT

The four cases reported have many symptoms in common although the location of the tumor was different in each instance. These reports illustrate the fact that tumors of sympathetic tissue origin may occur at various locations within the body, producing a multiplicity of symptoms. Although this type of tumor is relatively rare, the possibility of its presence should be kept in mind in the differential diagnosis of lesions of the spine.

6 North Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. FRANK R. OBER, Boston: We have had fifty-five cases of sympathicoblastoma at the Boston Children's Hospital and I would like to show some lantern slides illustrating how the bones are affected. A girl aged 13 months entered the hospital with a lump in her head. These slides show a tumor in the skull, a bone tumor at the upper end and lower end of the tibia and the adrenal gland with a large tumor. The next slide shows the cellular formation, which occurs almost always in rosettes with tumor tissue and very little tissue in between. The skull slide shows the destruction taking place in the calvarium. The anterior view shows the fontanels much larger than normal. The next slide shows the peculiar symmetric distribution of this tumor in the bony skeleton, especially at the upper and lower end of the long bones. This first child died within four days of admission. The patient had involvement of practically all the tissue in the body, the lymphatic system, the brain and so on. The second case is one of hemocytoblastoma in a child aged 15 months. The x-ray diagnosis was neuroblastoma sympathicum. The blood examination showed abnormal cells of a peculiar nature with leukemia and some eosinophils. Biopsy of the forehead was done and histologic examination revealed a malignant tumor which could not be classified. The kidneys, spleen, liver, lungs, submaxillary glands, dura, cranial bones, pancreas, bone

marrow and almost all the organs including the vertebrae and extremities, except the thyroid, the parathyroid, the pituitary and the central nervous system were involved. The x-ray appearance of this tumor is similar to that of the case of sympathicoblastoma. The sympathicoblastoma is a very malignant tumor but in a small number of cases in which massive hemorrhage was present the tumor disappeared and the patient remained alive after a number of years. We have had at least two examples in which the tumor proved to have the typical histology of the neuroblastoma, altered its nature after a period of time and became a benign ganglioneuroma. The finding of both benign and malignant representatives of the neuroblastoma series in one case is of considerable interest and should lead to conservative prognosis in such cases in which one tumor is known to be a ganglioneuroma and in which there is another tumor elsewhere in the body and not connected with the first mass. The second tumor may prove to be a malignant neuroblastoma. One must keep in mind, however, that there may be other forms of tumors involving bone which act in exactly the same manner as the neuroblastoma.

DR. G. K. CARPENTER, Nashville, Tenn.: Sympathicoblastomas may produce a great variety of symptoms, depending on the location. Often the first and only symptoms result from metastases, usually lymphatic, but may be circulatory or both, to various parts of the body. These tumors frequently metastasize to bone, particularly to the skull, and less frequently to the pelvis, spine, ribs, sternum and long bones. Those cases arising from the vicinity of the dorsal and lumbar sympathetic ganglion may early invade the spinal canal with resulting spinal nerve root and spinal cord symptoms. In the four cases presented by Dr. Chandler and Dr. Norcross the early symptoms in each case indicated the presence of a lesion of the spine. It is therefore evident that these tumors, either because of their location or because of the site of the metastasis, may confront the orthopedic surgeon with diagnostic difficulties. The adrenal medulla is frequently the site of the primary tumor, and in these cases the neoplasm usually occurs in infancy or early childhood. The symptoms in the cases of adrenal origin are usually produced by the metastases and are classified as either the Hutchison type, the Pepper type or the mixed type, depending on the location of the predominance of the metastases. If the tumor arises from the left adrenal, there are often metastases to the skull and other bones, the Hutchison type. If the tumor arises from the right adrenal there are often metastases to the liver, the Pepper type. Sympathicoblastomas as a whole are rather a confusing group of tumors. The adrenal group, which originates from the sympathetic tissue of the medullary portion of the adrenal gland, is unusual in that it occurs early in life and in most instances it metastasizes early, probably because the adrenal medulla where it arises is so vascular. These tumors often metastasize in so uniform a way and produce such characteristic symptoms that a fairly positive diagnosis may be made without biopsy or autopsy. The Hutchison type especially may be diagnosed frequently without the aid of a biopsy or autopsy. Tumors that do not originate in the adrenal are much more difficult to diagnose, as the site of origin may be any place in the body where sympathetic nervous tissue is located. The symptoms must therefore depend on the location of the tumor. None of the four cases presented in this paper apparently originated from the adrenal gland. Even though the adrenal group is more frequently encountered, it is important to the orthopedic surgeon to keep in mind that occasionally they do originate from sympathetic nervous tissue near or within the vertebral column, with resulting spinal or vertebral symptoms.

DR. FREMONT A. CHANDLER, Chicago: It would be presumptuous for any orthopedic surgeon to take over the field of the neuropathologist, and this has not been our intention. I am delighted to have Dr. Ober report on the large number of cases which were seen in the clinic in Boston. The cases which we reported came to us primarily because of a complaint that overlapped into the field of orthopedic surgery. The knowledge of such a tumor as a possible explanation of these complaints is the point we are trying to emphasize in this paper. There is plenty of dissension among neuropathologists as to the origin, classification and the like, and it would be out of our realm to emphasize that point. That the vast majority arise in the adrenal gland is well known, and the cases reported in the litera-

ture are numerous. The cases found as metastatic lesions are also numerous. As far as we can tell with this small series, the pathologic condition that we have encountered is primary. Dr. Cushing found one case which would coincide with the first case as arising within the spinal canal. It is interesting to learn from Dr. Carpenter's discussion that in their clinic they have made diagnoses of only two cases in ten years. These cases chanced to fall within our field within the course of one year. We were awakened to the possibility and I think because of that recognized them.

THROMBOPHLEBITIS

THE ROLE OF VASOSPASM IN THE PRODUCTION OF THE CLINICAL MANIFESTATIONS

ALTON OCHSNER, M.D.

AND

MICHAEL DeBAKEY, M.D.

NEW ORLEANS

There are few catastrophes in medicine as pathetic as the consequences of thrombo-embolic phenomena. Nothing is more tragic than the sudden death of a patient ready to go home after a relatively satisfactory postoperative convalescence. Although less dramatic and less severe only in magnitude, other thrombophlebotic sequelae may be of almost as great significance because of the persistence of disability during the entire lifetime of the person. That these complications occur not infrequently is exemplified by the observations of Snell¹ at the Mayo Clinic and of Dietrich² in Germany

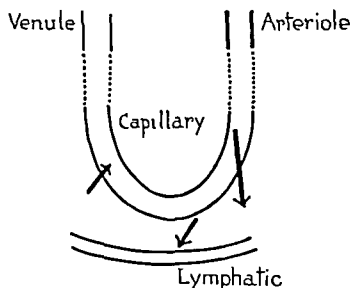


Fig. 1.—Diagram of normal physiological relationship of intravascular and perivascular fluids. As indicated by the arrows, normally there exists a balance between the amount of fluids leaving the blood vessels and entering the tissues and that leaving the tissues and entering the blood and lymphatic vessels.

that in approximately 8 per cent of all autopsies pulmonary embolism was considered the cause of death. Postoperative thromboses are of frequent occurrence, as illustrated by the relatively high incidence of 0.6 per cent in a collected series of 133,458 operations.³ No less significant is the fact that these postoperative vascular complications are apparently increasing. According to Höring,⁴ Reye⁴ and Adolph and Hopmann,⁵ the incidence of postoperative thrombo-embolism increased fivefold from 1920 to 1927. During the thirteen year period 1913-1926 Fahr⁴ found an increase in incidence of more than ten times. Undoubtedly, as has been emphasized by Matas,⁶ the greater number of operations now performed is in part responsible for this augmentation. That this is not entirely

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1. Snell, Albert: Relation of Obesity to Fatal Postoperative Pulmonary Embolism, *Arch. Surg.* 15: 237 (Aug.) 1927.

2. Dietrich, A.: Einige bemerkenswerte Beobachtungen von Thrombose und Embolie, *Chirurg* 1: 485 (April 15) 1929.

3. Ochsner, Alton, and DeBakey, Michael: Thrombophlebitis and Phlebotrombosis, *South. Surgeon* 8: 269 (Aug.) 1939.

4. Cited by Chiasseroni, A.: *Cong. Soc. internat. de chir., Rap.* 1: 3, 1929-1930.

5. Adolph, C. H., and Hopmann, R.: Beitrag zur Frage des gehäufteten Auftretens der Thrombosen und Embolien und ihre Beziehungen zur intravenösen Therapie, *Med. Klin.* 24: 1792 (Nov. 16) 1928.

6. Matas, Rudolph: Postoperative Thrombosis and Pulmonary Embolism Before and After Lister, Donald C. Balfour Lecture in Surgery, *Univ. Toronto M. Bull.* 10: 1, 1932.

the cause of the increased incidence of thrombosis and embolism is evidenced by Burke's⁷ and Martini and Oppitz's⁸ statistical analyses, in which an increase occurred also in medical conditions.

The exact cause of thrombophlebitis remains unestablished in spite of voluminous clinical and experimental investigations. Numerous etiologic factors have been presented as possessing pathogenic significance in the development of this enigmatic phenomenon. These have been reviewed and evaluated in another publication³ and no attempt will be made here to consider them. The concept that mechanical blockage of the venous and lymphatic systems is of primary significance in the production of the clinical manifestations in thrombophlebitis is, in our opinion, inadequate. Mechanical blockage produced by an intravascular clot or the obliteration of the lymphatic channels by perivenous inflammatory processes is in itself of little import. As a result of our clinical and experimental investigations we are of the opinion that the factor of vasospasm, which was first suggested by Leriche,⁹ is of much greater significance in the production of the clinical manifestations of thrombophlebitis.

In the light of our recent clinical and experimental investigations we believe that it is necessary to consider the mechanism of the development of the manifestations in thrombophlebitis on the basis of a disturbed physiology rather than on an anatomic-pathologic foundation.

Previously it was thought that the swelling of an extremity associated with a thrombophlebitic process was the result of increase in perivascular tissue fluid, which in turn resulted from an increase in the venous pressure produced by the mechanical blockage of the involved vein. Presumably an increased transudation of vascular fluids into the perivascular spaces occurs because of the disturbance in the relationship between the pressures within the vessel and the pressure of the tissue fluid. That this explanation is inadequate is substantiated by the fact that mechanical ligation of the main venous trunk of an extremity is not followed by edema. Matas¹⁰ originally suggested that

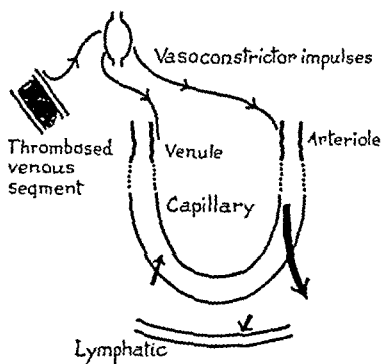


Fig. 2.—Diagram of production of edema in thrombophlebitis. As shown by the arrows, there is a greater amount of fluids leaving the blood vessels and entering the tissues than that leaving the tissues and entering the blood and lymphatic vessels. The increased transudation of fluids from the vascular system into the perivascular spaces is due to several factors. As a result of vasoconstrictor impulses initiated in the thrombosed venous segment there is produced a reflex vasospasm involving both the arterial and the venous elements of the vascular tree. Thus there occurs marked increase in venous pressure with consequent augmentation of filtration pressure and relative anoxia of capillary endothelium, both of which favor an increased transudation of vascular fluid into the perivascular tissue. The marked diminution of peripheral pulsations consequent to vasospasm and increased venous pressure results in a decrease in lymph flow and a stagnation of tissue fluids.

inadequate is substantiated by the fact that mechanical ligation of the main venous trunk of an extremity is not followed by edema. Matas¹⁰ originally suggested that

postphlebotic edema, which may assume elephantoid states, may be due to lymph stasis. Reichert¹¹ and Homans¹² on the basis of their experimental and clinical investigations, believe that venous obstruction is not sufficient to produce the edema in thrombophlebitis

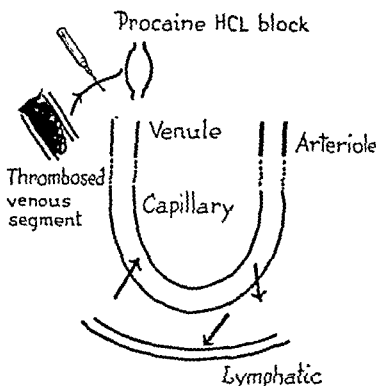


Fig. 3.—Diagram of mechanism by which procaine hydrochloride block produces improvement in thrombophlebotic edema. Interruption of the vasoconstrictor impulses results in a decrease in venous pressure, increased vascularity and increased peripheral pulsations. The diminished venous pressure results in a decreased filtration pressure and thus tends to prevent the increased transudation of vascular fluid into the perivascular spaces. Increased vascularity reestablishes normal oxygenation of the vascular endothelium and permits return of normal permeability, which prohibits excessive transudation. Increased pulsations favor removal of perivascular fluids by increasing lymph flow.

experimental observations that obstruction of the lymphatics was of little significance in the development of edema in thrombophlebitis.

Based on our clinical and experimental observations, we believe that vasospasm, resulting from impulses originating in the involved venous segment, is one of the most important factors in the production of the clinical manifestations. These vasospastic influences probably affect both arterioles and veins. That a localized thrombophlebitic process can initiate a marked vasospasm is illustrated by numerous reports.¹⁶ In

11. Reichert, F. L.: The Regeneration of the Lymphatics, *Arch. Surg.* 13: 871 (Dec.) 1926; The Recognition of Elephantiasis and of Elephant Tissue Roentgenograms with a Report on the Lymphedema, *ibid.* 20: 543 (April) 1930.

12. Zollinger, Robert: Experimental Thrombophlebitis and Lymphatic Obstruction of the Lower Limb, *Arch. Surg.* 18: 992 (April, pt. 2) 1929. Homans, John: Phlegmasia Alba Dolens and the Relation of the Lymphatics to Thrombophlebitis, *Am. Heart J.* 7: 415 (April) 1932; footnote 24.

13. M., and de Takats, Geza: The Mechanism of the Arch. Surg. 23: 937 (Dec.) 1931.

14. Jung, Adolphe: Recherches expérimentales sur les œdèmes chirurgicaux des membres d'origine phlébotique, *J. de chir.* 37: 481 (April) 1931.

15. Fontaine, R., and Sousa Pereira: Oblitérations et résections veineuses expérimentales; contribution à l'étude de la circulation collatérale veineuse, *Rev. de chir.* 75: 161 (March) 1937.

16. These reports include:

Trémolières, F., and Vêran, P.: Syndrome d'oblitération artérielle du membre inférieur droit apparu au cours d'une embolie pulmonaire profonde avec embolies pulmonaires, *Bull. méd.*, Paris 43: 1.

Audier, M.: La symptomatologie artérielle des phlébites des membres et de leurs séquelles, *Progrès méd.*, May 4, 1935, pp. 729-734.

Nicole, R.: Arteriospasmus bei akuter Venenthrombose, *Schweiz. med. Wchenschr.* 65: 676 (July 27) 1935.

Läwen, A.: Thrombectomy in Venous Thrombosis and Arteriospasm, *Arch. f. klin. Chir.* 189: 53, 1937; Ueber Thrombectomy bei Venenthrombose und Arteriospasmus, 61. Tag. d. deutsch. Ges. f. Chir., Berlin, 1937.

Lindgren, S.: Arterien-symptome bei den tiefen Bein-thrombosen, *Uppsala läkaref. förh.* 42: 415, 1937.

Audier, M.: L'acétyleholine dans le traitement des phlébites des membres, *Monde méd.* 48: 17 (Jan. 1) 1938.

Chevrier, in discussion on Grégoire.¹⁷

Mondor, in discussion on Grégoire.¹⁷

Pesnel, P.: Arterial Spasm of Lower Extremities Following Phlebitis: Study Apropos of Case, *Semaine d. hôp. de Paris* 14: 376 (Oct. 1) 1938.

Läwen, A.

Pampati.¹⁷

Ugri and Massone.¹⁷

7. Burke, Mead: Thrombosis: A Medical Problem, *Am. J. M. Sc.* 106: 796 (Dec.) 1938.

8. Martini, P., and Oppitz, R.: Untersuchungen über die Zunahme der Thrombosen und Embolien in den letzten Jahren, *München. med. Wchenschr.* 75: 1593 (Sept. 14) 1928.

9. Leriche, René: Traitement chirurgical des suites éloignées, des phlébites et des grands œdèmes non médicaux des membres inférieurs, *Bull. et mém. Soc. nat. de chir.* 53: 187 (Feb. 19) 1927. Leriche, René, and Kunlin, J.: Traitement immédiat des phlébites post-opératoires par l'infiltration novocaïnique du sympathique lombaire, *Presse méd.* 42: 1481, 1934. Leriche.²²

10. Matas, Rudolph: The Surgical Treatment of Elephantiasis and Elephantoid States Dependent upon Chronic Obstruction of the Lymphatic and Venous Channels, *Am. J. Trop. Dis.* 1: 60, 1913.

many instances the vasospasm has been so marked that the condition was originally considered to be one of arterial embolism.¹⁷ In some instances actual gangrene occurred.¹⁸ Experimentally we¹⁹ have been able to show that localized chemical endophlebitis would result

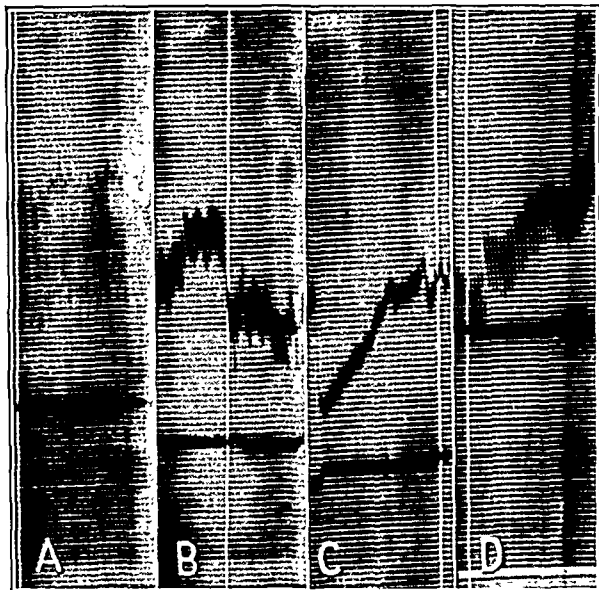


Fig. 4.—Tracings showing volume of pulsations in hind foot of a dog, as determined plethysmographically. A, normal pulsations; B, ligation of femoral vein produced marked diminution in volume of pulsations; C, injection of 40 per cent aqueous solution of sodium salicylate produced further diminution in the pulse volume; D, interruption of nerve pathways by local infiltration of procaine hydrochloride around site of irritated segment abolished effect of chemical phlebitis.¹⁹

in marked arteriolar vasospasm of such severe degree that practically all pulsations were lost. That this mechanism is the result of vasoconstrictor impulses originating in the involved segment and transmitted over the sympathetic nervous system has been proved by the fact that it can be prevented by sympathectomy or by blocking the sympathetic nerves with procaine hydrochloride.

In order to understand the mechanism by which vasospasm can produce edema it is necessary to review the physiologic relationship of intravascular and perivascular fluids. Normally a balance exists between the

amount of fluid going out of the vessels into the tissues and the amount going out of the tissues into the vessels (fig. 1). The passage of fluid from the vessels into the perivascular spaces is dependent on the differences in the pressures (filtration pressure) in the intravascular and perivascular spaces, being considerably greater in the former than in the latter. On the other hand, the passage of fluid out of the tissues is due to two factors: (1) the passage of fluid from the perivascular spaces into the vascular lumen (because of the difference in the osmotic pressures in the intravascular and perivascular spaces, which is considerably greater in the former than in the latter) and (2) the lymph flow. The transudation of fluid from the vascular system into the perivascular spaces is increased by a number of factors. Whenever there is an increase in venous pressure there occurs an increase in filtration pressure, which favors the transudation of fluid from the vascular into the perivascular spaces. Another prominent factor in the production of increased transudation of fluid from the vascular system into the perivascular spaces is anoxia of the capillary endothelium, in which the normal permeability of the endothelium is lost.

Edema is greatly influenced by the presence or absence of normal arteriolar pulsations, as proved by the recent experiments of McMaster and Parsons.²⁰ These investigators showed that in the absence of pulsations there was almost no movement of lymph but that in the presence of pulsations the lymph flow was

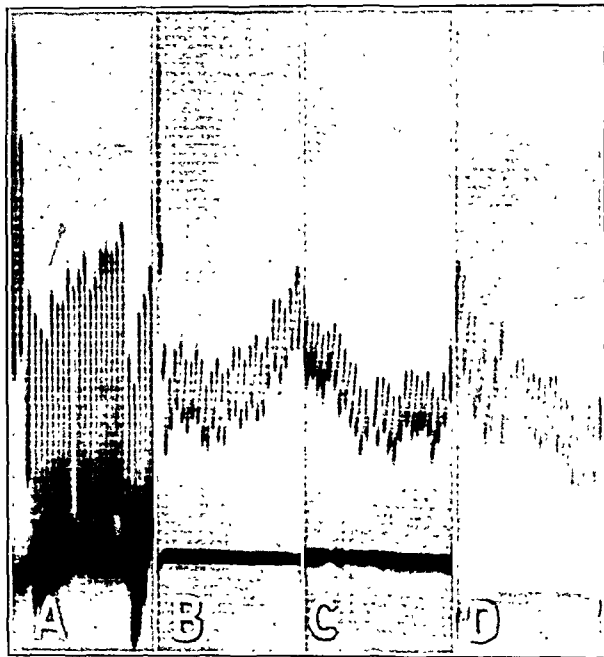


Fig. 5.—Tracing showing volume of pulsations in hind foot of dogs, as determined plethysmographically. Experiment similar to that outlined in figure 4 except that lumbar sympathetic ganglion and intervening chain had been resected twenty-four hours previously. Whereas following ligation (B) there is diminution in volume of pulsations, following injection of sodium salicylate (C) the volume of pulsations is not decreased.¹⁹

rapid. As already mentioned, it has been repeatedly observed clinically and experimentally that vasospasm occurs during the course of a thrombophlebitic process.

17. These include:
Lawen, A.: Arteriospasmus bei akuter massiver Thrombose der V. femoralis. *Zentralbl. f. Chir.* **61**: 1681 (July 21) 1934.
Pampari, D.: Thrombophlebite acuta degli arti e fenomeni pseudo-embolici. *Policlinico (sez. chir.)* **45**: 470 (Oct.) 1938.
Uggeri, C., and Massone, A.: Arterial Symptoms from Phlebitis of Limbs. *Arch. ital. di chir.* **49**: 429, 1938.
Wertheimer, P., and Fricb, P.: Thromboses veineuses, oblitérations artérielles et gangrène des membres. *Presse méd.* **43**: 1004 (June 22) 1935.
Audier, M.: Thromboses veineuses aiguës simulant l'embolie artérielle des membres. *Paris méd.* **1**: 384 (May 2) 1936.
Fontaine, R.; Israël, L., and Sousa Pereira: A propos d'un cas de thrombose de la veine cave inférieure. *Thrombo-phlébites simulant les embolies artérielles et gangrènes d'origine veineuse*. *J. de chir.* **47**: 926 (June) 1936.
Audier, M., and Haimovici, H.: Gangrene of Venous Origin in Extremities, with Special Reference to Role of Phlebitis and Obliteration. *Presse méd.* **46**: 1043 (Sept. 21) 1938.
Banzet, Paul, in discussion on Grégoire. *Mém. Acad. de chir.* **64**: 367 (April 27) 1938.
Grégoire, Raymond: La répercussion de l'inflammation des veines sur le système artériel collatéral. *Mém. Acad. de chir.* **64**: 363 (April 27) 1938.
Grégoire, Raymond: Blue Phlebitis (Phlegmasia Cerulea Dolens). *Presse méd.* **46**: 1313 (Sept. 3) 1938.
Trémolières and Vêran.¹⁵ Lindgren.¹⁶ Chevrier.¹⁶ Bergeret, Guillaume and DeLarue.¹⁵
18. Bergeret, A.; Guillaume, A. C., and DeLarue, J.: Gangrène ischémique de membre inférieur par thrombose oblitérante de la totalité des veines. *Ann. d'anat. path.* **9**: 536 (May) 1932. Tilley, J. H.: Gangrene of Extremities in Thrombophlebitis. *Am. J. Obst. & Gynec.* **56**: 157 (July) 1938.
19. DeBakey, Michael; Burch, G. E., and Ochsner, Alton: Effect of Chemical Irritation of Venous Segment on Peripheral Pulse Volumes. *Proc. Soc. Exper. Biol. & Med.* **41**: 585 (June) 1939.

20. Parsons, R. J., and McMaster, P. D.: The Effect of the Pulse upon the Formation and Flow of Lymph. *J. Exper. Med.* **68**: 353 (Sept.) 1938. McMaster, P. D., and Parsons, Robert J.: The Effect of the Pulse on the Spread of Substances Through Tissues, *ibid.* **68**: 377 (Sept.) 1938.

As a matter of fact the cutaneous pallor of the involved extremity in femoro-iliac thrombophlebitis is probably the result of arteriolar spasm. We have observed this repeatedly, and in a number of cases herein reported there were no pulsations in the dorsalis pedis and posterior tibial arteries, and volume pulsations of the

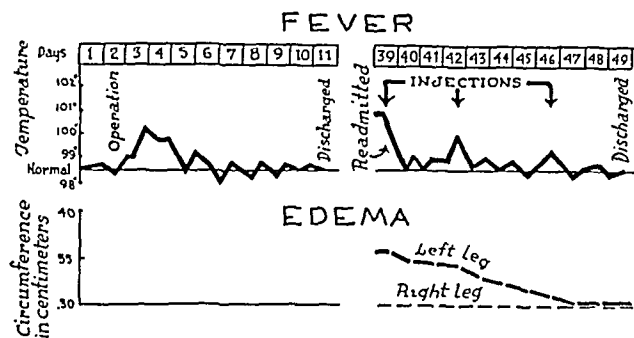


Fig. 6 (case 1).—Effect of procaine hydrochloride block of sympathetics on temperature and edema in thrombophlebitis. Epigastric hernioplasty was performed May 5, 1938, and the patient was discharged nine days after the operation. Thrombophlebitis developed in the left leg June 4, approximately four weeks after the operation. Lumbar sympathetic blocks were performed June 11, 14 and 18. The temperature, which previous to the blocks ranged between 100 and 101.8 F., rapidly returned to normal. Edema of the leg subsided completely within eight days after the first block.

digits of the involved extremity were absent as determined plethysmographically. It is probable that the vasospastic factor involves the venous as well as the arterial side of the circulatory bed. This contention is substantiated by the definite decrease in the venous pressure following blocking of the sympathetic nervous system and has been demonstrated phlebographically by dos Santos.²¹

As a result of the vasoconstrictor impulses initiated in the thrombosed segment there occur a number of factors which tend to increase the amount of perivascular fluid, i. e. edema (fig. 2). Venous spasm, in addition to the mechanical blockage of the involved

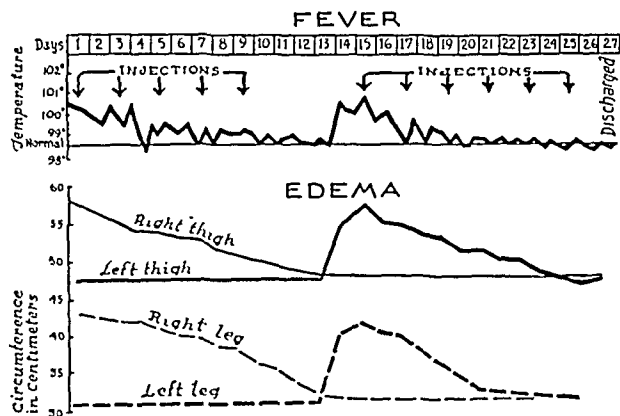


Fig. 7 (case 3).—Effect of procaine hydrochloride block of sympathetics on temperature and edema in thrombophlebitis. Thrombophlebitis of the right lower extremity developed approximately twelve days after the operation. Lumbar sympathetic blocks were performed as indicated by arrows. Fever rapidly subsided and edema disappeared twelve days after treatment was begun. Thrombophlebitis of the left lower extremity then suddenly developed and the left lumbar sympathetic blocks were performed. The temperature returned to normal within five days after treatment was begun and edema in the left leg disappeared within ten days.

segment of vein, results in a marked increase in intravenous pressure. In several of our cases in which venous pressure determinations were made they were found to be four and five times the normal values. This increase in venous pressure augments the filtration

pressure and favors the increased transudation of vascular fluid into the perivascular spaces. Because of the associated arteriolar spasm and evidences of diminished vascularity there probably occurs a relative anoxia of the capillary endothelium, favoring increased permeability of this membrane and consequent increased transudation of vascular fluid into the perivascular spaces (fig. 2). The reflex vasoconstriction of the arterioles and the increased venous pressure produce a marked diminution in the arteriolar pulsations which are so essential for the flow of lymph, as shown by McMaster and Parsons.²⁰ This results in a decrease in lymph flow and stagnation of tissue fluids. Because of the accumulation of proteins in the perivascular fluid a vicious circle is set up in that the osmotic pressure of the perivascular fluids approaches that of the fluid within the vessels, tending to prevent the reabsorption of fluid from the perivascular spaces into the vascular tree. Thus it is evident that vasoconstrictor impulses originating in a thrombophlebitic process are of great importance in the production of thrombophlebitic manifestations.

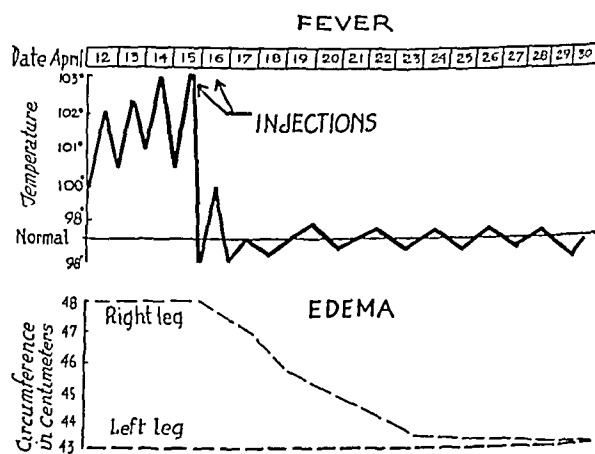


Fig. 8 (case 15).—Effect of procaine hydrochloride block of sympathetics on temperature and edema in thrombophlebitis. Within forty-eight hours after sympathetic blocks the temperature dropped from 103 F. to normal and remained so. Within seven days after treatment was begun practically all edema in the involved extremity had disappeared.

Not infrequently, following the subsidence of the acute inflammatory process, the patient continues to have considerable edema and other undesirable sequelae persisting for the rest of his life. In such an instance, probably the persistence of the symptoms is due to the perivascular fibrosis the production of which is favored by lymph stasis. The mechanical blocking of the veins and the perivascular lymphatics probably interferes with the lymphatic flow and is responsible for the retention of fluid in the perivascular spaces. Also the perivascular fibrosis that replaces the thrombophlebitic inflammatory exudate may mechanically interfere with venous and lymphatic drainage. This contention is supported by the fact that in isolated instances symptoms are relieved by "unbridling" the vein, as practiced by Leriche,²² Jennings,²³ and Homans.²⁴ On the other hand, a much more desirable result theoretically could be obtained if the vicious circle of increased transudation of intravascular fluid into the perivascular spaces could be prevented and at

21. dos Santos, J. C.: La phlébographie directe: conception, technique, premiers résultats. *J. internat. de chir.* 3: 625, 1938.

22. Leriche, Ren.: "L'artère de la périphérie dans la phlébite des accidents tardifs." *Soc. nat. de chir.* 1938.

23. Jennings, J.: "Lower Extremities, Arteries." *Surge.* 87: 641 (May) 1928.

24. Homans, John: "Amputation of the Lower Extremities, Arteries." *Surge.* 87: 641 (May) 1928.

the same time the normal flow of lymph reestablished. If the hypothesis that the vicious circle resulting in the increased accumulation of perivascular fluids is both directly and indirectly due to vasospasm resulting from impulses originating in the involved segment, the vicious circle should be broken by blocking the sympathetic nervous system and preventing the vasospastic influences from reaching the peripheral vessels.

That such can be accomplished, we have demonstrated both experimentally and clinically. Following blocking of the sympathetic nervous system the vasospasm is overcome, resulting in a decrease in the venous pressure, which in turn diminishes the filtration pressure and tends to prevent the increased transudation of vascular fluid into the perivascular spaces. Also the return of normal arteriolar pulsations reestablishes oxygenation of the vascular endothelium, permitting a return of the normal permeability of this membrane, which prohibits an excessive transudation (fig. 3). The

However, interruption of nerve pathways by local infiltration of procaine hydrochloride around the site of the irritated segment (fig. 4) or by resection of the lumbar sympathetic ganglions and chain (fig. 5) abolished or prevented this effect. Similar observations have been

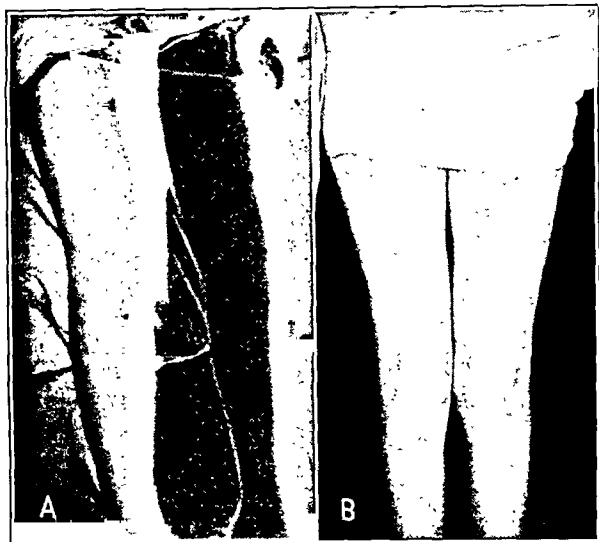


Fig. 9 (case 10).—The lower extremities of patient with right femoro-iliac thrombophlebitis. *A*, before treatment was begun: The marked swelling of the entire right lower extremity is readily apparent. *B*, after treatment was instituted: All previous manifestations of thrombophlebitis in the right lower extremity have disappeared. The patient had been walking about in the ward for two weeks before this picture was made.

return of normal pulsation favors the removal of the perivascular fluid by increasing the flow of lymph.²⁰ That blocking of the sympathetics increases lymph flow has been demonstrated by Monteiro.²⁵ The diminution in the quantity of the perivascular fluid and the decrease in its protein content reestablish the normal relationship between the osmotic pressures of the intravascular and perivascular fluids, favoring the absorption of the latter into the vascular tree. As a result of the breaking of the vicious circle and reestablishment of the normal relationship, the abnormal transudation is prevented and the perivascular absorption is promoted (fig. 3).

In an experimental investigation¹⁹ which has been reported elsewhere it was found that after ligation of the femoral vein in dogs there resulted a marked diminution in volume pulsations of the corresponding foot and that a chemical irritant (sodium salicylate, 40 per cent) placed either in the lumen or in the perivascular tissue of an isolated segment of this vein produced further diminution in the pulse volume (fig. 4).

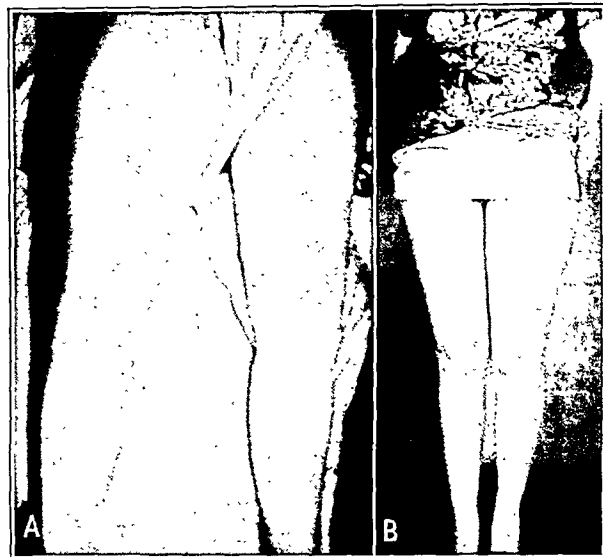


Fig. 10 (case 11).—The lower extremities of patient with right femoro-iliac thrombophlebitis. *A*, before treatment was begun: There is marked swelling of the involved extremity. *B*, eleven days after the institution of therapy: All previous manifestations of thrombophlebitis have disappeared.

made on patients suffering from thrombophlebitis, who showed a definite decrease in the volume pulsations of the digits of the involved extremity; after procaine block of the lumbar sympathetic nerves the volume pulsations returned to normal.

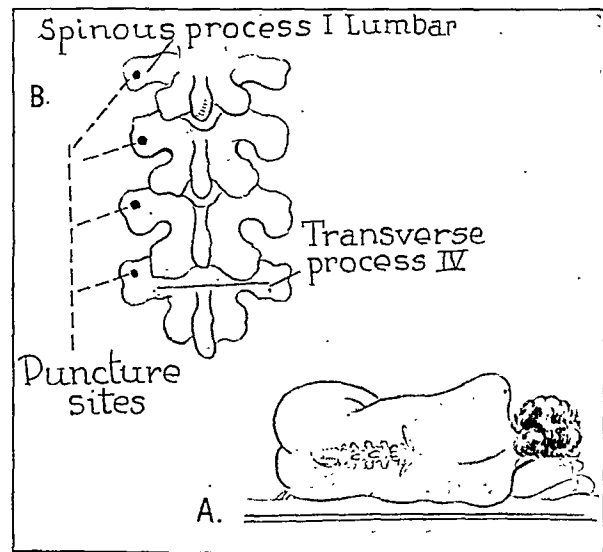


Fig. 11.—Technic of lumbar sympathetic block in thrombophlebitis of the lower extremities. *A*, lateral recumbent position of patient. *B*, the cutaneous puncture sites lie on a horizontal level with and approximately two and one half fingerbreadths lateral to the upper part of the spinal processes of the first four lumbar vertebrae. The respective transverse processes lie immediately beneath these puncture sites.

In the past twelve months we have treated fifteen patients with thrombophlebitis of the extremities, in two cases bilateral, making seventeen thrombophlebitic processes which have been treated by procaine

25. Monteiro, Hernani: La lymphangiographie chez de vivant méthode, résultats et applications, Bruxelles-méd. 19: 205 (Dec. 18), 242 (Dec. 25) 1938.

hydrochloride block of the regional sympathetic ganglions. Of these seventeen thrombophlebitic processes, sixteen involved the lower extremities and one the upper extremity. The thrombophlebitic process fol-

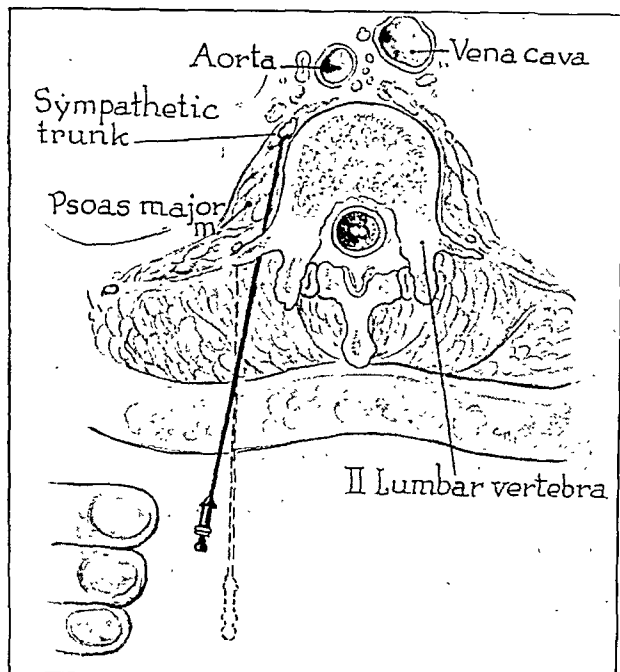


Fig. 12.—Cross section through second lumbar vertebra showing technic of lumbar sympathetic block. A needle is inserted vertically until transverse process of vertebra is reached (represented by dotted line) and then direction of the needle is changed slightly and inserted two and one half fingerbreadths beyond the transverse process so that its point lies near the anterolateral surface of the body of the vertebra where the sympathetic chain lies.

lowed an operative procedure in seven instances, of which two were in the pelvis and five in other parts of the body. Two followed cholecystectomy, one an

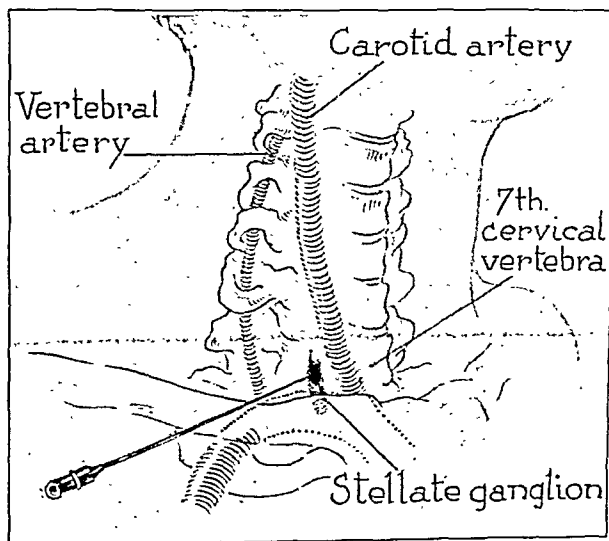


Fig. 13.—Technic of stellate ganglion block by anterior approach. Cutaneous site of puncture is approximately 1 cm. medial to midpoint of and immediately over clavicle. A needle is inserted on horizontal level with upper border of clavicle and directed posteriorly and medially at a 45 degree angle with the midline of the body.

appendectomy, one a hernia and one a plastic operation on an amputated stump which previously had been infected. Four were postpartal, one followed typhoid, two followed infection and one followed trauma. In

most of the cases the thrombophlebitis was severe, as evidenced by the febrile reaction and the marked edema. The highest temperature was 104.8 F., the lowest 99.6. In ten cases the temperature was 101 F. or over, in six 102 or over, and in five 103 or over. In only two was the temperature less than 100 F. In all but one there was considerable swelling. The increase in the circumference of the involved extremity as compared with that of the normal side varied from several centimeters to as much as 9 cm. There was considerable variation in the length of time that elapsed between the onset of the thrombophlebitic process and the institution of therapy. The longest period was twenty-eight days and the shortest one day. Nine patients had been ill for a week or longer, three were ill for two weeks or longer, and only two had been sick less than three days at the time therapy was instituted. The length of time that elapsed between the onset of the thrombophlebitic process and the institution of therapy

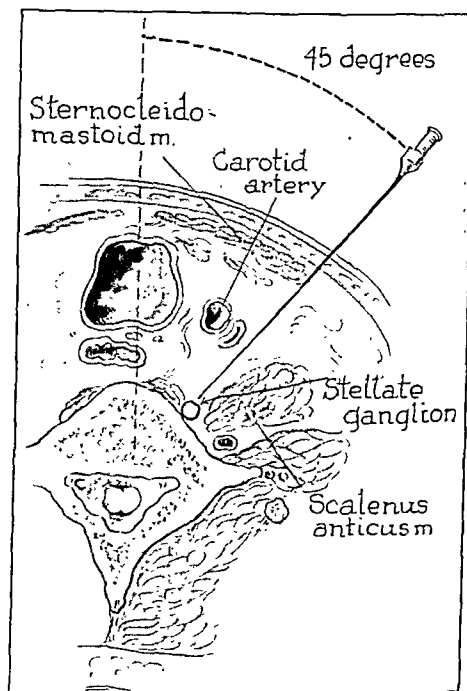


Fig. 14.—Cross section of neck showing technic of stellate ganglion block by anterior approach. Needle inserted posteriorly and medially at a 45 degree angle with the midline so that the point of the needle impinges against the anterolateral surface of the body of the seventh cervical vertebra or at the junction between the seventh cervical and the first thoracic vertebra, where the stellate ganglion lies.

is important, we believe, because the earlier the therapy is instituted the better will be the result.

In the seventeen thrombophlebitic processes, the number of injections necessary to produce relief of all manifestations varied. Six had only one injection, five had two injections, three had three injections and one each had four, five and six injections, respectively. Thus, relief was obtained in 65 per cent of the cases by two injections or less.

The results obtained by procaine hydrochloride block of the regional sympathetic ganglions were quite dramatic. There was relief of pain within fifteen to twenty minutes after the injections. In all six cases in which a single injection was given the relief of pain was permanent after the injection. Of the remaining eleven thrombophlebitic processes in which more than one injection was given there was com-

plete and permanent relief of pain after the second injection in eight and after the third injection in three. In no instance did the pain persist after the second injection. Within twenty-four hours after procaine hydrochloride block there was definite improvement in the patient generally, as evidenced by a decrease in pyrexia, which usually persisted (figs. 6, 7 and 8). Whereas in the beginning the injections were made more or less haphazardly, we now believe that injections should be made every twenty-four to forty-eight hours as long as the patient has any fever. The length of time elapsing between the institution of therapy and complete subsidence of all febrile reactions varied. Four patients had fever for only one day after the institution of therapy, four had fever for two days, one for three days, two for four days, two for five days, one for seven days and two for eight days. It is significant that approximately 50 per cent of the patients were fever free within forty-eight hours after the institution of therapy. One patient who had a pulmonary infarction continued to have fever for thirty-one days, but this was undoubtedly due to the pulmonary complication, because all evidences of thrombophlebitis subsided completely within nine days.

Whereas the length of time swelling exists after the onset of thrombophlebitis varies considerably, in general a severe thrombophlebitic process is complicated by swelling of the extremity for long periods. This may persist throughout the life of the individual and is one of the most distressing manifestations of the process. Whereas it cannot be definitely determined what the ultimate outcome will be in the cases herein reported, it is probable that there will be no subsequent swelling, because in every instance the patient was up and about the ward for several days before returning home, and in no instance was there any edema at the time of discharge (figs. 9 and 10). Three patients have been seen nine months, two months and five weeks, respectively, after discharge from the hospital and all have remained free from any manifestations. In one case the edema had completely disappeared in three days, in five after four days, in one after eight days, in two after nine days, in three after ten days and in one each after eleven and twelve days (figs. 6, 7 and 8). One patient who was pregnant had very slight edema, and this completely disappeared within twenty-four hours.

The length of time the patient was kept in the hospital after the institution of therapy varied. The shortest time was four days. Three patients were discharged after six days, five after eight days and one each after ten, eleven and twelve days. One patient remained in the hospital for a month after the institution of therapy, being kept for two weeks after all manifestations had completely subsided in order that subsequent plethysmographic and venous pressure determinations might be made. One patient who had a pulmonary infarction remained in the hospital a total of sixty-one days; one month of this was necessitated by the pulmonary complication. She was kept in the hospital for an additional five weeks in order that subsequent observations might be made and to make certain that there would be no recurrence of her pulmonary process.

TECHNIC OF SYMPATHETIC BLOCK

In every instance in which the lower extremity was involved, the lumbar sympathetic ganglions were blocked with 1 per cent procaine hydrochloride, the posterior approach being employed, as previously

described and as illustrated in figures 11 and 12.²⁶ For the upper extremity we prefer the anterior approach to the stellate ganglion as illustrated in figures 13 and 14.²⁶

SUMMARY

1. The concept that mechanical blockage of the venous and lymphatic systems is of primary significance in the production of the clinical manifestations in thrombophlebitis is, in our opinion, inadequate.

2. Based on recent clinical and experimental investigations, we believe that many of the symptoms and signs are due to vasospasm of the arterial and venous systems and that the vasoconstricting impulses originate in the thrombophlebitic segment.

3. As the result of vasospasm there result increased filtration pressure, relative anoxia of the capillary endothelium and diminution in the flow of lymph, all of which increase the amount of perivascular fluid.

4. By interrupting the vasoconstrictor impulses with procaine hydrochloride infiltration of the sympathetic ganglions, there is produced a reestablishment of the normal exchange of intravascular and perivascular fluids.

5. Fifteen patients with seventeen thrombophlebitic processes have been treated by procaine block of the sympathetics. These cases are characterized by the prompt and permanent relief of all clinical manifestations in contrast with the usual case of phlegmasia alba dolens, in which there is pyrexia for from four to six weeks and the likelihood of persistent undesirable sequelae such as edema, varicosities and ulceration.

6. There was prompt and permanent relief of pain in all instances.

7. In half the cases the temperature returned to normal within forty-eight hours and in the other half within one week.

8. In more than half the cases the edema completely subsided in eight days and in the remaining ones within twelve days.

9. Sixty per cent of the patients were discharged from the hospital as cured within eight days after the institution of therapy.

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ABSTRACT OF DISCUSSION

DR. GEZA DE TAKATS, Chicago: The dramatic results obtained by the authors in the treatment of thrombophlebitis deserve the widest attention. This concept of reflexes originating from the site of a vascular block has been fruitful in the treatment of all acute vascular occlusions. Thus, in peripheral arterial occlusions the shutting down of the collateral pathways contributes considerably to the diminished blood flow to the affected limb. In pulmonary embolism, as Dr. Fenn and I have shown, the vagal reflexes originating from the occluded pulmonary artery radiate to the heart, bronchi and gastrointestinal tract and again greatly add to the plight of the patient. In thrombophlebitis the edema and pain have been relieved by blocking the sympathetic trunks of the affected extremity. As shown experimentally, vasoconstriction was abolished and venous return was improved by a single or sometimes repeated injection of procaine hydrochloride. Arterial spasm has received a great deal of attention; this presentation emphasizes, in addition, a spasm in the veins which has received little attention. Yet all of us have seen a firm, hard cord palpable in the groin during the first few hours of thrombophlebitis disappear under heat and elevation; every one has occasionally struggled with a cubital vein which contracted after a traumatizing venous puncture and those who treat varicose veins by injection must have often seen

26. Ochsner, Alton, and DeBakey, Michael: Treatment of Thrombophlebitis by Novocain Block of Sympathetics, *Surgery* 5: 491 (April) 1939.

the spasm of the adjoining venous segments. The release of sympathetic vasoconstriction not only decreases venous pressure, and with it the edema, but markedly increases the oxygen saturation of the venous blood and thus that of the tissue fluids as shown from our clinic a few years ago. Not infrequently the hard edema present in patients suffering from Buerger's disease and resistant to rest in bed may promptly disappear after sympathectomy. The hard traumatic edema of Sudeck's atrophy, which so often baffles the industrial surgeon, readily yields to sympathetic denervation. One point needs further emphasis. Patients do not react with the same intensity to an identical vascular accident. I have seen a complete disappearance of arterial pulses simulating arterial occlusion in a few instances; other patients, however, may react with a vasodilatation and increased temperatures. In fact, a mild, latent phlebitis may sometimes be detected by a rise in cutaneous temperatures of the thigh or toes. This premonitory vasodilatation, however, as the thrombus becomes larger or completely obturating, may give rise to a marked vasoconstriction in the same patient.

DR. JOHN R. PAINE, Minneapolis: Despite a great deal of research, the treatment of venous thrombosis has not undergone any improvement for the past thirty years. It has seemed to me that before an adequate understanding or a proper treatment for this condition could be reached three questions would have to be answered: 1. What is the cause of the pain? 2. What is the cause of the swelling? 3. What is the difference in the pathologic process present in those cases in which thrombi are present without physical signs and those in which thrombi are associated with all the local and general signs of a severe inflammation? Dr. Ochsner appears to have adequately answered the first of these questions and possibly the second. The cause of pain is vasospasm. Whether the cause of the edema is also on the basis of vasospasm requires further proof. It would be interesting to know what the effect of the authors' treatment would be on the edema persisting in some cases after all the acute symptoms have subsided. The clinical and experimental work of Homans has indicated that in many cases the edema may be on the basis of lymphatic occlusion secondary to perivenous inflammation. This has impressed me a great deal and the evidence he has presented cannot lightly be disregarded. Dr. Bellis and I have been studying cases of chronic thrombophlebitis by means of venograms, cutaneous temperatures, venous pressures and tissue tensions. The tissue tensions have usually been within normal limits, as have the cutaneous temperatures. The venous pressures are usually slightly elevated. The venograms are difficult of interpretation but frequently show definite scattered areas of spasm in the demarcated veins. We have treated seven cases of acute thrombophlebitis of the deep veins of the legs and thirteen chronic cases by means of intermittent venous occlusion. The cuffs have been applied to the thighs and a pressure of from 70 to 80 mm. of mercury with a four minute cycle used. Treatment for from three to four hours a day has been continued for a variable period. In only two cases, both of an acute nature, have pain and discomfort not been relieved. In about half of the cases edema has been decreased. The results obtained have been due in part, we think, to the release of vasospasm. The acute cases have been treated with considerable trepidation, but embolic accidents have not occurred. The effect of this type of treatment on the pulse and temperature of the acute cases has been noteworthy.

DR. SAMUEL H. SEDWITZ, Youngstown, Ohio: At the clinic we have adopted the following procedure: The patient is placed in a bed and his leg is elevated at an angle of 65 degrees under a tent with heat applied and controlled by a thermostat between 96 and 100 F. We are still using leeches as advised by Dr. Ochsner some time ago. The patient is given acetyl-beta-methylcholine chloride 1:500 (mecholy) by iontophoresis daily for twenty minutes with 30 milliamperes. When possible these patients use the oscillating bed so that their general circulation is improved. In the morning before the treatment is begun patients are given a whirlpool bath of a temperature of 110 F. for twenty minutes. This is given to increase the collateral and capillary circulation. That the circulation is increased has been verified by surface temperature and oscillometric readings. All our patients were relieved of pain

within twenty-four hours. This I believe can be explained by the authors' exposition that there occurs an arterial spasm. The treatment mentioned certainly relieves any arterial spasm. The same treatment has been used for conditions in which arterial spasm occurs and has relieved the patient of pain in cases of thrombo-angiitis obliterans, embolism and arteriosclerotic thrombosis, ergot poisoning with gangrene, frost bites and Raynaud's syndrome. We have given these patients roentgen therapy along Hunter's canal and in the inguinal regions. This treatment is taken about every forty-eight hours. As soon as the patient's sedimentation time, white blood count and temperature are normal for forty-eight hours elastic bandages are applied to the legs and the patient is encouraged to get up and walk. In chronic thrombophlebitis the treatment is practically the same only in addition to use of the oscillating bed for from three to six hours three times a week there is applied intermittent venous compression cuffs, the timing of which is synchronized with the oscillations of the bed. As soon as there is a decrease in the measurements of the enlarged limb an elastic bandage is placed from the toes to the knee and the patient wears this for from six to eight weeks. If the edema persists above the knee, mecholy is given by iontophoresis every two or three days. An elastic bandage is kept applied for a year or more until the patients can go about their duties without distressing edema above the ankles. The performance of nerve block as recommended by the authors is not without danger.

DR. ALTON OCHSNER, New Orleans: The treatment used by Dr. de Takats in mild cases is a very good one. In this group of seventeen cases the only form of therapy used was rest in bed and the sympathetic block. We have not elevated the extremity or used compression bandages. Because none of our patients had edema when they got out of bed, we have not used compression subsequently and no one developed edema. In answer to Dr. Paine, I believe that the results which we have obtained in prompt relief of the clinical manifestations associated with acute thrombophlebitis indicate that vasospasm is a prominent factor in the development of these manifestations. On the other hand, I believe that in chronic thrombophlebitis in which there is perivenous fibrous tissue deposition the results from this therapy probably will not be as good. Dr. Paine has asked "What is the difference in the pathologic process present in those cases in which thrombi are present without physical signs and those in which thrombi are associated with all the local and general signs of a severe inflammation?" I agree heartily that they are not the same processes. We believe that the patient with fever, pain and swelling of the extremity has an inflammatory process involving the vein, i. e. thrombophlebitis. On the other hand, as Dr. DeBakey and I have emphasized in other publications (*South. Surgeon* 8: 269 [Aug.] 1939) the patient who develops a pulmonary embolism without antecedent manifestations of thrombophlebitis has an intravascular clot (phlebothrombosis) caused not by destruction of the vascular endothelium but by changes in the blood and minimal changes in the endothelium. Today we have been discussing only thrombophlebitis.

Three Divisions of the Health Section.—The complete organization of the Health Section, which was approved by the Assembly of the League of Nations in 1923, consisted of three divisions. The temporary committee which had directed the work of organization and the early activities continued as the directing committee. Dr. Madsen, of Copenhagen, has been the chairman of the Provisional Committee and of the permanent Health Committee since the beginning. A second body, the Consulting Committee of Experts, consisting of the directors of the International Health Office at Paris, was created to discuss such matters as might be referred to it by the Health Section of the League and to assure a free interchange of information and documents between the Paris and the Geneva institutions. The third branch is the executive staff connected with the secretariat of the League and it is composed of public health experts, statisticians and clerks who devote their entire time to the work.—Lyon, R. A.: *The Development of International Health Organizations, Ann. M. History* 1:519 (Nov.) 1939.

MÉNIÈRE'S SYNDROME

ACID-BASE CONSTITUENTS OF THE BLOOD: TREATMENT WITH POTASSIUM CHLORIDE

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A revival of interest in the medical and surgical treatment of Ménière's syndrome has been manifest during the past decade. Dandy,¹ modifying Frazier's original operation, Coleman and Lyerly,² Munro,³ Horrax,⁴ Crowe⁵ and others have reported successful results following cerebellar exploration and division of the vestibular branch or division of the combined vestibular and cochlear branches of the eighth nerve. An alternative procedure is destruction of the labyrinth and the ganglions of Scarpa either through the middle ear⁶ or through the roof of the petrous bone.⁷ Equally satisfactory therapeutic results have been obtained by Mygind and Dederding,⁸ Furstenberg, Lashmet and Lathrop,⁹ Brown,¹⁰ Foldes¹¹ and Cawthorne and Fawcett¹² with less drastic procedures.

It is believed that none of these investigators nor any others have elucidated satisfactorily the etiology of the disease. Recently a report by Hallpike and Cairns¹³ has appeared in which are described the histologic changes in the temporal bones of two patients who died after section of the eighth nerve. In each case the temporal bones on the affected side showed gross distention of the endolymph spaces together with degenerative changes in the sensory elements. Evidence that the disturbance is not exclusively a dysfunction of the endolymph system, however, lies in the fact that complete section of the eighth nerve usually stops attacks of vertigo but does not affect tinnitus. The probable explanation is that section of the eighth nerve is distal to the cells in the medulla which possess the

most peripheral neurons of the cochlear apparatus but proximal to the cells in Scarpa's ganglions of the vestibular apparatus.

Since the precise nature of the disturbance remains unknown, we prefer the term Ménière's syndrome or symptom complex⁹ to Ménière's disease, retaining the eponym without etiologic implications. Vertigo, tinnitus, deafness, nausea and vomiting are symptoms characteristic of the syndrome. Vertigo may be the most distressing of these and prompts the patient to seek medical advice. There is usually an exacerbation of symptoms in acute episodes. In many instances these are incapacitating and confine the patient to bed for days or even weeks. The syndrome is chronic and most of the patients whom we have seen have had symptoms for several years. We believe that the diagnosis of Ménière's syndrome is not difficult to make in most cases and only those presenting characteristic manifestations and no serious complicating conditions will be discussed.

Observations on forty-eight patients will be presented in this communication. All have been seen during the past three years by us or by our colleagues at the Massachusetts General Hospital, Boston City Hospital and allied institutions. The number is approximately equally divided between males and females. The majority of patients were in the fifth, sixth or seventh decade of life. The clinical observations on thirty-three patients are summarized in table 1. Observations on the remaining fifteen are not summarized but will be discussed briefly. Several patients who had vertigo or tinnitus for only a short time were seen during the progress of this study. Data from these are not included because of the short duration of symptoms. Undoubtedly in some of these cases the complete symptom complex, including deafness, will develop. At the time the patients were seen, however, this had not occurred. A few patients were seen who were thought to have either a brain tumor or Ménière's syndrome. Only those in whom a brain tumor was readily excluded are included in this report. Blood counts, examinations of the urine and Hinton or Wassermann reactions of the blood were negative in each case.

The observations on the acid-base constituents of the blood, total fixed base, sodium, potassium, calcium, chloride, total carbon dioxide, phosphate, protein, and nonprotein nitrogen are given in tables 2 and 3. The methods for the determination of the constituents and the average range for normals have been given elsewhere¹⁴ and will not be repeated.

Our interest in the determination of the acid-base constituents of the blood was twofold. Several investigators have assumed that Ménière's symptom complex is associated with a disturbance of water and salt metabolism. Mygind and Dederding¹⁵ were the first to advance this hypothesis. A waterlogged labyrinth is thought to exist and a dehydrating regimen, therefore, is indicated in treatment. Furstenberg, Lashmet and Lathrop⁹ reinvestigated the problem some time later and showed evidence which indicated that

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The following persons aided in this study: Drs. F. S. Coombs and C. I. Johnson, Messrs. William V. Consolazio and L. J. Pecora, and Miss Elizabeth Thorogood.

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16. Footnote deleted on proof.

a retention of sodium salts was of greater pathogenic significance in the production of symptoms than a retention of water. They recommended a diet with a low sodium content and intermittent periods of ingestion of ammonium chloride. The concentration of electrolytes or the degree of hydration of the blood was not reported in any of these communications.

tion is a high potassium intake.¹⁸ Similarly, symptoms of myasthenia gravis are relieved by a high potassium diet,¹⁹ although constant changes in the level of serum potassium have not been observed.²⁰

The observations on the constituents of the blood of all the patients in this group show no consistent changes from normal. In table 2, some of the data

TABLE 1.—Clinical Observations

Patient	Age	Sex	Duration of Symptoms	Incapacitating	Middle Ear Infection	Symptoms *				X-Ray of Skull	Lumbar Puncture	Caloric Test
						Tinnitus	Vertigo	Vomiting	Deafness			
E. L.	49	♂	5 yr.	No	No	++	+++	+	++ right	Not done	Not done	Not done
R. B.	60	♀	4 yr.	No	No	++	++	0	No	Not done	Not done	Not done
A. A.	45	♂	9 yr.	Yes	No	+++	+++	+++	+ right	Negative	Not done	Diminution, right ear
M. F.	40	♀	5 yr.	No	No	++	++	+	+ right	Not done	Negative	Hypoactive, right ear
C. U.	35	♀	11 yr.	Yes	Bilateral	+++	+++	+++	++ right	Negative	Negative	Hypoactive, right ear
R. K.	41	♀	4 yr.	No	Chronic, right	++	++	++	+ right	Not done	Not done	Hyperactive, right ear
A. S.	62	♀	1½ yr.	Yes	No	+	++	0	No	Not done	Not done	Not done
M. A.	53	♀	6 yr.	Yes	No	+++	+++	+++	+ right	Negative	Negative	Diminution, right ear
M. R.	54	♀	1 yr.	Yes	Childhood	+++	+++	+++	+ left	Negative	Negative	Diminution, left ear
P. K.	48	♀	3 yr.	No	No	++	++	+	+ left	Negative	Not done	Not done
H. C.	31	♀	1 yr.	Yes	No	+++	+++	+++	++ right, +++ left	Not done	Negative	Not done
J. C.	60	♂	2 yr.	No	No	++	++	+	+ left	Not done	Negative	Hypoactive bilaterally
R. H.	53	♂	20 yr.	No	Childhood	++	++	++	+ left	Negative	Not done	Diminution, left ear
W. R.	41	♂	20 yr.	Yes	No	++	++	++	+ left	Negative	Not done	Diminution, left ear
L. C.	43	♂	8 mo.	Yes	No	++	+++	0	+ left	Negative	Not done	Not done
E. G.	43	♀	2½ yr.	Yes	No	++	++	+++	+ left	Not done	Not done	Not done
H. E.	49	♀	7 yr.	Yes	No	+++	+++	+++	+ right	Not done	Negative	Diminution bilaterally
G. C.	63	♂	3 yr.	No	Childhood	+	++	+	+ left, ++ right	Not done	Not done	Negative
G. B.	47	♂	4 yr.	No	No	++	++	+	+ right	Negative	Negative	Diminution, right ear
K. B.	53	♀	8 yr.	Yes	No	++	++	+	+++ left, ++ right	Negative	Negative	Not done
P. S.	28	♀	3 yr.	Yes	Childhood	+++	+++	+++	+ left	Negative	Negative	Negative
M. H.	63	♀	3½ yr.	Yes	Childhood	+	+++	+++	++ right	Not done	Not done	Not done
M. C.	60	♂	2½ yr.	No	Chronic, bilateral	+++	+++	+++	++ right, ++ left	Not done	Not done	Hypoactive bilaterally
J. T.	51	♂	2 yr.	Yes	No	++	++	++	+ left, ++ right	Negative	Not done	Not done
J. O.	46	♀	1½ yr.	Yes	Childhood	+++	+++	+++	+ right	Not done	Not done	Not done
D. W. J.	65	♀	8 yr.	Yes	Slight, chronic	+++	+++	+++	++ right	Negative	Negative	Diminution, left ear
M. L.	38	♀	3 yr.	Yes	No	+++	+++	+++	+ left	Negative	Negative	Diminution, right ear
G. R.	48	♂	9 yr.	Yes	No	+++	+++	+++	+ right	Negative	Negative	Diminution, left ear
E. W. L.	57	♂	6 yr.	No	Left ear in childhood	+++	+++	++	+ left	Negative	Negative	Diminution, left ear
M. C.	53	♀	10 yr.	Yes	No	+	+++	+++	++ bilateral	Negative	Negative	Diminution bilaterally
S. W.	59	♂	7 yr.	No	Chronic, right	+++	+++	0	+ right	Negative	Not done	Not done
A. D.	49	♀	7 yr.	Yes	No	++	++	++	+ right, + left	Not done	Not done	Not done
C. R.	45	♂	4 yr.	Yes	No	+++	+++	+++	++ right	Negative	Not done	Hypoactive, right ear

* In this table a scale of 0 to ++++ has been used to indicate severity of symptoms.

Since both regimens were therapeutically successful, it seemed to us expedient to investigate the constituents of the blood before and after treatment. Our second interest in the study of blood constituents was particularly the level of serum potassium. In a disturbance of conduction of nerve impulses, such as in familial periodic paralysis,¹⁷ a change in concentration of serum potassium is observed. The treatment for this condi-

were collected when patients were having severe symptoms, other data when the patients were not having severe symptoms and still further data subsequent to the institution of medical treatment. Exceptions were noted on only four patients (E. L., R. B., H. C. and A. S.).

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If the mechanism that produces symptoms of Ménière's syndrome were gross retention by the body of water or sodium chloride or a combination of the two, one of three changes in the serum might be observed. These are (1) an increase in concentration of sodium and total fixed base with little change in water and protein content, (2) an increase in water

Further evidence to substantiate this conclusion was obtained from the data presented in table 3. Four patients were studied to determine whether or not acute attacks could be induced experimentally. For this purpose water and one or more sodium salts were given orally or parenterally. This resulted in an increase in serum p_H and an increase in concentration of serum

tions on Thirty-Three Patients

Previous Treatment	Result	High Potassium Intake		Comment
		Duration	Results	
Low sodium chloride diet with ammonium chloride	Improved	Not given		
Low sodium chloride diet	Improved	Not given	.....	Benign hypertension
Low sodium chloride diet with ammonium chloride	Improved	24 mo.	Improved; four mild attacks in 2 years	Father had similar symptoms
Low sodium chloride diet with ammonium chloride	Improved	Not given		
Low sodium chloride diet with ammonium chloride	Improved	Not given		
None	.....	3 mo.	Improved; no acute attacks	
None	.....	16 mo.	Improved; omitted potassium chloride on 3 occasions with exacerbation of symptoms	Mild thyrotoxicosis
None	.....	14 mo.	Improved; exacerbation of symptoms with omission of potassium chloride	Headache for 25 years attributed to polycythæmia vera; several in family have chronic headaches
Low sodium chloride diet with ammonium chloride	No effect	14 mo.	Improved; has attacks infrequently	Mild rheumatic valvular heart disease
None	.....	12 mo.	Improved; no acute attacks	
None	.....	12 mo.	Improved; few mild attacks; omitted potassium chloride several times with exacerbation of symptoms	Congenital syphilis intensively treated since age of 13
None	.....	1 mo.	Improved; mild attacks infrequently	
Low sodium chloride diet with ammonium chloride	Improved	12 mo.	Improved; omitted potassium chloride on 3 occasions with exacerbation of symptoms	Father and grandfather had similar symptoms
Low sodium chloride diet with ammonium chloride	No effect	14 mo.	Improved; no symptoms when taking potassium chloride	Obese
None	.....	10 mo.	Improved; few mild attacks	
Low sodium chloride diet with ammonium chloride	Improved	3 mo.	Improved; symptoms returned when potassium chloride was omitted	
Low sodium chloride diet	Improved	12 mo.	Improved; one or two mild attacks a month	
None	.....	9 mo.	Improved; severe attacks infrequently	
None	.....	8 mo.	Improved; mild attacks following smoking	
Low sodium chloride diet with ammonium chloride	Improved	9 mo.	Improved; return of symptoms with urinary retention	Simple goiter
None	.....	2 mo.	Improved	Several in family have chronic headache
None	.....	6 mo.	Improved; three mild attacks	
None	.....	4 mo.	Improved; no acute attacks	
None	.....	4 mo.	No effect; patient uncooperative; took small amount infrequently	
None	.....	6 mo.	Improved; no acute attacks	
None	.....	Not given	.....	Sweating and palpitation accompany attacks; benign hypertension
Low sodium chloride diet	Improved	Not given	.....	Head injury 15 years ago; no residual symptoms
Low sodium chloride diet with ammonium chloride	No effect	10 mo.	Improved; uncooperative; takes potassium chloride irregularly; several mild attacks	
Low sodium chloride diet with ammonium chloride	No effect	16 mo.	Improved; no acute attacks	
None	.....	4 mo.	Improved; no acute attacks; uncooperative	
Low sodium chloride diet	Improved	1 yr.	Improved; ten mild attacks since beginning potassium chloride	
	Improved	9 mo.	Improved; mild attacks infrequently	
Many drugs	No effect	6 mo.	Improved; mild attacks infrequently	Family history of epilepsy

content with diminution in concentration of sodium, total fixed base and protein, and (3) a decrease in concentration of protein without change in concentration of sodium and total fixed base. None of these changes or others were demonstrated. At the time some of the bloods were drawn the patients had been on a low sodium diet and had been benefited by it. No diminution in concentration of sodium or significant dehydration of the blood was evident. These data suggest that gross retention of water and salt by the body is not the inciting agent in acute attacks.

sodium and serum water. From 40 to 80 milliequivalents of sodium lactate, 60 milliequivalents of sodium chloride and 400 cc. of water were given intravenously and rapidly to each of the patients. Two patients received, in addition, at a subsequent experiment large amounts of sodium bicarbonate by mouth. An increase in concentration of serum sodium as great as 5 milliequivalents per liter was produced without exacerbation of symptoms. A decrease in concentration of protein with an increase in water content was observed simultaneously. In two experiments there was an increase

accomplished in each case without any exacerbation of symptoms. It was concluded that neither hydration or alkalosis nor an elevated serum sodium is a necessary accompaniment of acute symptoms of Ménière's syndrome.

During the past eighteen months, all the patients whom we have seen suffering from this malady have been treated by a high potassium intake, meanwhile being allowed an otherwise normal diet. The therapeutic effect of this regimen has been very reassuring. It cannot be considered as a cure for all the symptoms, but clinical improvement has been impressive. Since the institution of this regimen, surgical treatment has not been carried out in any of our cases.

MÉNIÈRE'S SYNDROME

MEDICAL VS. SURGICAL TREATMENT

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From the large group of cases in which vertigo is a complaint may be isolated a group of cases in which the course of the disorder is a chronic one and in which intermittent paroxysmal vertigo occurs in association with nausea, vomiting, loss of hearing and tinnitus on the side of the affected ear, occasionally with nystagmus, but without anatomic or pathologic changes which identify the disease.

MEDICAL TREATMENT

Previous to the paper of Furstenberg, Lashmet and Lathrop² in 1934, in which favorable results were reported to have been obtained in fourteen cases of typical Ménière's syndrome in which treatment with a diet low in sodium and with ammonium chloride was instituted, cases of this nature had been variously dealt with at the Mayo Clinic.

From the files of the Mayo Clinic the histories of patients considered to present clinical evidence of the typical Ménière's syndrome were selected, comprising patients who had registered at the clinic because of vertigo between Jan. 1, 1929, and July 1, 1938. Only cases presenting the typical triad of symptoms, that is, vertigo, deafness and tinnitus, were included with the exception of seven patients who had deafness but not tinnitus, all of whom had the typical seizures of severe vertigo. All patients with so-called pseudo-Ménière's syndrome, in which the characteristic vertigo occurred unaccompanied by deafness or tinnitus, were excluded, as well as cases presenting evidence of advanced arteriosclerosis, intracranial lesions or cases diagnosed labyrinthitis. All patients had had medical, neurologic and otologic examinations as well as fundoscopic studies and, in most cases, roentgenologic examinations of the head.

We are reporting 186 cases. Fifty patients were female and 136 were male. That Ménière's syndrome

is primarily a disease of middle life is shown by the distribution of our cases according to age. In the first decade there were no patients; in the second, one; in the third, ten; in the fourth, thirty-two; in the fifth, sixty-two; in the sixth, fifty-eight; in the seventh, twenty-two; and in the eighth, only one.

All of the patients of whom we have records received treatment of some sort for the vertigo, and consequently we are unable to state definitely whether spontaneous recovery occurs in this condition or not. However, it is our opinion that spontaneous disappearance of the vertigo for some unknown reason is not infrequent, since sixteen patients who noted no improvement while on the Furstenberg regimen subsequently experienced reduction in the severity and frequency of the vertigo, whereas in five cases the vertigo disappeared. Whether this represents true recovery is doubtful; it probably is more accurate to classify these improvements as spontaneous remissions.

It is evident to us that complete deafness on the affected side is no guaranty for disappearance of the vertigo, because in our material in eleven cases complete deafness on the affected side was present and seizures of vertigo continued to occur. The type of deafness was determined in 170 cases, in 117 of which nerve deafness was present, in eleven total loss of hearing was present on the affected side, in twenty-six combined deafness was present and in sixteen conduction deafness was present, and, of these, one was diagnosed otosclerosis and five stapes fixation deafness. The deafness was unilateral in 115 cases and bilateral in sixty-seven cases.

The caloric or Bárány test was not reliable in diagnosing Ménière's syndrome. Of the seventy-seven cases in which it was performed, only thirty-nine, or 50.6 per cent, of cases showed abnormal reactions. In six cases there was a complete loss of vestibular function as determined by the Bárány test and the attacks continued, while in four cases complete loss of hearing and vestibular function on the affected side was found. We have not had the opportunity of conducting a follow-up study of the patients who experienced long-term improvement and relating this to vestibular function, in order to determine whether or not such improvement is dependent on loss of vestibular function. As aforementioned, however, it has been our experience that loss of vestibular function on the affected side does not terminate the attacks of vertigo.

There were twenty-three cases in which the Furstenberg treatment had never been tried, although general measures, elimination of foci of infection and the use of sedatives had been instituted. The present status of these patients is indicated in table 1. In considering these cases, as in the cases to be dealt with subsequently, it is impossible to speak of cessation of the vertigo as recovery, since there can be no assurance that recurrence of the vertigo may not take place at some time in the future, although some of these patients have been free from vertigo as long as eight years. Seventy-four per cent of these patients either were free from attacks of vertigo or were suffering from rare to frequent mild seizures. However, in most of these cases the improvement seemed spontaneous and without reference to any form of treatment. It seems evident that spontaneous improvement not infrequently occurs in cases of Ménière's syndrome and may last several years.

The results of treatment of 161 nonsurgical patients as well as of fourteen surgical patients treated by medical management prior to operation are given in table 1.

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Read before the Section on Nervous and Mental Diseases at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

2. Furstenberg, A. C.; Lashmet, F. H., and Lathrop, Frank: Ménière's Symptom Complex: Medical Treatment, *Ann. Otol., Rhin. & Laryng.* 43: 1035-1046 (Dec.) 1934.

It will be noted that 128 of these patients have been treated with a low salt diet and ammonium chloride, as advised by Furstenberg and his co-workers¹⁰ in 1934. In most instances the patient was advised to take ammonium chloride in the dosage of 9 Gm. daily, continuing on the medication for three days and then taking the low salt diet alone for two days, and continuing in this manner. Of the 128 patients so treated, thirty-three, or 26 per cent, reported the vertigo to be improved by the treatment, whereas forty-five patients, or 36 per cent, stated that complete disappearance of the vertigo had occurred. Nine of these patients reported that vertigo immediately returned when salt was added to the diet and that vertigo disappeared on discontinuing its use. Eighteen of these forty-five patients who experienced complete relief failed to state how long complete freedom from vertigo had endured, whereas twenty-seven of these patients reported complete relief from vertigo dating back from six months to four years.

Fifty patients, or 39 per cent, stated that the Furstenberg regimen with ammonium chloride had failed to eliminate or essentially decrease the frequency or severity of the vertigo. Fourteen patients obtained temporary or no relief and were subjected to section of the eighth nerve. Three of the patients who obtained poor results with ammonium chloride stated that they had not been faithful in taking the medication and one patient stated that he persisted in taking sodium bicarbonate. Six patients stated that it was impossible for them to take ammonium chloride because it produced nausea or vomiting, or both. One patient stated that he was forced to discontinue ammonium chloride because of weakness which decreased after discontinuation of the drug, whereas two patients stated that they thought that the drug made their seizures worse and one patient felt that the ammonium chloride intensified his tinnitus, another discontinued the drug because of itching, and a third because of constipation.

It is difficult, of course, to evaluate these unfavorable results, because it is impossible to be sure whether or not the patients have faithfully followed instructions regarding medication and diet. The possibility exists that they have not, however, since this group of cases does not seem to differ essentially from the larger group in which good results with the treatment were reported, with the exception of the fact that, in our material, a larger percentage of patients with unilateral deafness was helped by the treatment than of those with bilateral deafness, as will be mentioned later. The significance of this is not clear, but it may indicate that patients with Ménière's syndrome in its more advanced form respond more poorly to this type of treatment than those in the early stage of the syndrome.

Because of the aforementioned complaints regarding ammonium chloride, it occurred to us to try another salt in its place. Keith and others¹³ have demonstrated that potassium nitrate is a neutral and relatively non-toxic salt and that it usually can be taken without resulting in gastrointestinal disturbances.^{13a} With its

use, sodium tends to be eliminated from the body. Also Talbott and his co-workers^{13b} apparently have demonstrated that a high intake of potassium may be more significant in the treatment of Ménière's syndrome than a restriction of sodium. Potassium nitrate has been employed by us in the treatment of Ménière's syndrome since late in 1937. Because patients who registered at the clinic for the first time later than July 1, 1938, are not included in this series, only a comparatively small number of cases can be reported here. We have analyzed the records of thirteen patients who had been given a modified Furstenberg regimen employing potassium nitrate in the dosage of 9 Gm. daily, taken three days and discontinued for two days with the low sodium diet. Four patients reported that they had been free from seizures for more than five months. Three patients reported that the frequency and severity of the seizures had been greatly reduced. Three patients reported that moderate reduction in the frequency and severity of the seizures had occurred.

Six of these patients who reported improvement with potassium nitrate had been treated previously elsewhere with the Furstenberg regimen with ammonium chloride;

TABLE 1.—Effects of Medical Treatment on Vertigo in 175 Cases of Ménière's Syndrome

Type of Treatment	Disappearance of Vertigo		Improvement of Vertigo		No Improvement of Vertigo	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Low salt diet and ammonium chloride (128 cases).....	45	36	33	26	50	39
Low salt diet and potassium nitrate (13 cases).....	4	31	6	46	3	23
Low salt diet alone (11 cases). Other general measures (23 cases)*.....	3	27	4	36	4	36
	14	61	4	17	5	22

* In most instances disappearance of, or improvement in, the vertigo did not immediately follow the treatment.

one with much improvement and four with little or no improvement. In one case ammonium chloride could not be taken because of nausea, although the potassium nitrate was well tolerated. Potassium nitrate failed to improve the vertigo of three patients.

It is somewhat interesting to note the therapeutic results in eleven cases in which treatment with a low salt diet alone was given, without medication being prescribed. It is true that most of these patients did not complain of extremely severe or frequent spells of vertigo. However, at the present time three patients report that they had not had vertigo for more than six months, and two of these were still avoiding salt. Two patients reported a great decrease in the frequency and severity of the vertigo and both of these patients also avoided the use of salt, whereas one patient noted only slight improvement with the low salt diet and had discontinued its use. Five patients noted no improvement from the avoidance of salt but in one case the seizures later became spontaneously less frequent and less severe.

Considering the 152 patients treated with a low salt intake with or without the addition of medication, we find that fifty-two patients, or 34 per cent, are completely free from vertigo whereas forty-three, or 28 per cent, experienced a variable amount of relief from ver-

10. Furstenberg, A. C.: Ménière's Symptom Complex: Medical Treatment, Tr. Pacific Coast Oto-Ophth. Soc. 21: 150-160, 1936.

13. Keith, N. M., and Binger, M. W.: Diuretic Action of Potassium Salts, J. A. M. A. 105: 1584-1591 (Nov. 16) 1935. Keith, N. M.; Osterberg, A. E., and Binger, M. W.: The Effect of Certain Potassium Salts on Acid Base Excretion in the Normal Individual, Am. J. Physiol. 119: 347-348 (June) 1937. Keith, N. M.; Whelan, Mary, and Bannick, E. G.: The Action and Excretion of Nitrates, Arch. Int. Med. 46: 797-832 (Nov.) 1930.

13a. Potassium nitrate is administered in enteric coated pills each containing 0.5 Gm. of the salt. It is recommended that the medication be taken after meals.

13b. Talbott, J. H.; Brown, Madelaine R.; Coombs, F. S., and Con-solazio, W. V.: Electrolyte Balance of the Blood in Ménière's Disease, Proc. Soc. Exper. Biol. & Med. 38: 421-422 (April) 1938.

tigo. Of these, twenty-three patients noted marked relief and nineteen patients noted moderate relief from vertigo. Fifty-seven patients of this group, or 38 per cent, experienced no improvement in the vertigo with treatment. In regard to the results of medical treatment on tinnitus and deafness, improvement in these symptoms often parallels the improvement in the vertigo, but not infrequently the reverse occurs. Twenty-eight per cent of these patients reported their deafness to be improved and 25 per cent stated that the deafness became worse, while in 47 per cent the deafness was unchanged, and essentially the same results were obtained with tinnitus, although the improvement in tinnitus did not necessarily parallel improvement in hearing.

The statement is frequently made that, with medical treatment, improvement in the vertigo is temporary. The duration of complete freedom from vertigo experienced by thirty-five patients treated by some form of low sodium intake regimen from whom we were able to obtain this information is as follows: Eight patients have been free from vertigo for six months, seven for eight months, seven for one year, one for eighteen months, eight for two years, and four for three to four

TABLE 2.—Maintenance of Treatment in 152 Cases in Which Ménière's Syndrome Was Treated by Low Salt Diet With or Without Medication

Results Obtained	Patients Still Undergoing Full Treatment		Patients Receiving Occasional Treatment		Patients Still on Low Salt Diet Alone		Patients Who Discontinued Treatment	
	Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent
Good (95 cases)	19	20	13	40	31	33	32	34
Poor (57 cases)	3	5	4	7	2	4	48	84

years. While it is impossible to state that some of these patients may not again have vertigo, it seems to us that these periods of complete freedom from vertigo would seem to bring into question the statement that medical treatment is of no value because of the temporary nature of the improvement produced by it.

In our consideration of the medical problem the questions were asked: Is it necessary to continue medical treatment in order to control the symptoms, and is it possible to continue effective medical treatment following dismissal from the clinic? From the replies of 152 patients regarding the length of time that treatment was continued, the answers to these questions, at least in part, became evident (table 2). As might be expected, many more patients who obtained good results from treatment continue with it than do those who fail to improve. However, it is probably not necessary, in some cases at least, to continue medical treatment in order to control the symptoms. Whether or not spontaneous remission accounts for this continued improvement without treatment cannot be determined. Evidently it is possible for some patients to continue effective medical treatment after dismissal from the clinic.

The last question which remains to be answered is: Is it possible to select patients most suited for medical treatment? It is difficult to lay down any hard and fast rules in this regard. In the following section of this paper one of us (Adson) considers the selection of patients for surgical treatment and to a certain extent the discussions overlap. The patient's occupation, intel-

ligence and social status must be taken into consideration, since it is obvious that, in any individual case, any one of the aforementioned factors may preclude the possibility of successful medical treatment. We believe that, unless one of the aforementioned factors prohibits medical treatment, a trial is well worth while.

Of ninety-four cases in our series of unilateral deafness, the condition in sixty-four, or 68 per cent, was improved with the Furstenberg treatment or a modification of it, whereas of fifty-eight cases of bilateral deafness in which treatment was given in thirty-one, or 53 per cent, the condition was improved. Whether these figures are significant or not we cannot state. The fact remains, however, that in our series of cases a higher percentage of patients with unilateral deafness improved under the Furstenberg treatment or a modification of it than of patients with bilateral deafness.

The problem of the medical treatment of Ménière's syndrome can be summed up best by answering in a brief form the questions asked in the beginning of the paper: 1. Do patients recover from Ménière's syndrome spontaneously? It seems evident that in a condition in which remissions are so frequent the terms "improvement" or "disappearance of vertigo" should be used instead of "recovery." Spontaneous disappearance of the vertigo does occur in Ménière's syndrome, and not infrequently. 2. If improvement takes place spontaneously, does it necessarily follow the loss of hearing and of vestibular function on the side affected? Our study appears to show that this may occur, but not necessarily. 3. Is the syndrome amenable to medical treatment? If so, which medical treatment is the most effective? In our series of cases the vertigo was either improved or made to disappear completely by employing a low salt diet alone or with ammonium chloride or potassium nitrate in 62 per cent of cases. It is impossible to state how many of these patients have experienced spontaneous improvement but the fact remains that improvement occurred directly after treatment. Thirty-eight per cent of patients obtained transitory or no relief from the treatment. Recent observations suggest that a potassium salt may be expected to be of more value than ammonium chloride, and this has been employed in a small number of cases. 4. Is it possible to continue effective medical treatment following dismissal from the clinic? Our results tend to indicate that it is possible but difficult for some individuals.

The selection of patients for medical treatment depends on the occupation, intelligence and social status of the patient. Our results seem to indicate that patients with Ménière's syndrome and unilateral deafness tend to do better with medical treatment than patients with bilateral deafness.

SURGICAL TREATMENT

Anatomic Considerations.—Subtotal section of the acoustic nerve is the operation of choice when substantial hearing remains. McKenzie¹⁴ employed this technic first in August 1931, but unfortunately his patient had little or no hearing at the time of the operation, so that he was unable to determine the efficacy of the operation until July 1932, when it proved very effective in that the vertigo was relieved and the hearing was preserved. The technic was suggested by Dandy¹⁵ in

14. McKenzie, K. G.: Intracranial Division of the Vestibular Portion of the Auditory Nerve for Intractable Vertigo with Two Case Reports. *Tr. Acad. Med., Toronto*, Nov. 15, 1932.
15. Dandy, W. E.: Ménière's Disease: Its Diagnosis and a Method of Treatment. *Arch. Surg.* 16: 1127-1152 (June) 1923.

1928 but was not employed by him until March 10, 1933.¹⁶ Cairns and Brain¹⁷ had employed the same technic in February 1933.

Since these early cases were reported, many surgeons have adopted the procedure unless the hearing is so impaired or the tinnitus so severe that the surgeon prefers total resection of the acoustic nerve to that of subtotal section. Dandy¹⁸ suggested that five eighths of the cephalad portion of the acoustic nerve be sectioned, whereas others believe that section of the cephalad half of the nerve is sufficient. McKenzie, with McGregor's assistance, has made anatomic and microscopic studies concerning the relation that exists between the vestibular and cochlear portions of the acoustic nerve, which I wish to quote:

The vestibular and cochlear fibers arise as the central process of the bipolar cells of their respective ganglia. The two nerves approach the brain stem together from the internal auditory meatus and are known as the auditory nerve. In its passage across the posterior fossa, the auditory nerve lies lateral and in close approximation to the seventh nerve, from which it is separated by the pars intermedia of Wrisberg.

Prof. G. S. Streater's researches on the development of the auditory nerve would lead one to expect a fairly complete separation of the cochlear and vestibular fibers close to the internal auditory meatus. With Dr. McGregor's help an auditory nerve was exposed in its bony canal. The vestibular and cochlear fibers were easily identified as separate bundles close to the cochlea and semicircular canals. The vestibular portion could be traced medially, and at the internal auditory meatus it made up the cephalad and dorsal half of the auditory nerve, with the patient in the prone position. More medially still, the vestibular fibers become ventral, whether by twisting or interspersing or a combination of both I am not sure. For our present purpose it is the relationship close to the internal auditory meatus that concerns us.

On microscopic examination the vestibular nerve shows a very much better defined picture of medullated nerve fibers, the fibers are larger and have a thicker medullary sheath. The difference is sufficiently definite to enable one to examine the cross section of an auditory nerve and immediately pick out the vestibular half, that is, if the section is taken close to the internal auditory meatus. Further studies are required on the mesial portion. Close to the internal auditory meatus, when one attempts to split the nerve at operation, a line of cleavage or groove is occasionally seen, but on microscopic examination there is an absence of a fibrous septum dividing the two nerves. On one occasion Dandy observed a complete separation of the cochlear and vestibular fibers. Numerous attempts have been made in the autopsy room to divide the nerve into cochlear and vestibular portions. Microscopic study of these specimens has always shown an intermingling of the fibers along the line of division; thus it is not possible to accurately split the nerve in a microscopic sense. However, our studies show that division can be sufficiently accurate for the present clinical purpose.

Surgical Considerations.—Since the original description of the symptoms of Ménière's syndrome, many suggestions concerning treatment have been advocated. The most effective medical therapy is that outlined by Furstenberg, Lashmet and Lathrop and the most successful results obtained by surgical therapy are those from total and subtotal section of the acoustic nerve. Although the acoustic nerve had been sectioned for vertigo and tinnitus prior to 1924, it was Dandy's¹⁵ monumental work that emphasized the efficacy of sec-

tion of the acoustic nerve in the treatment of Ménière's syndrome. Since then it has been universally accepted as a surgical procedure. Subtotal section of the nerve has replaced total section of the nerve when appreciable hearing still remains on the affected side.

Historically, it is interesting to note that Ballance¹⁹ in 1894 suggested that the eighth cranial nerve be divided for vertigo. In 1908 both Frazier²⁰ and Ballance^{20a} sectioned the acoustic nerve intracranially for vertigo. Frazier²¹ credited Krause with having divided the eighth nerve for the relief of persistent tinnitus in 1905. Frazier's patient was benefited but not entirely relieved. Ballance's patient was operated on chiefly for tinnitus, but the tinnitus did not disappear until four months after section of the acoustic nerve. His patient had been operated on previously for the removal of the semicircular canals, with relief of nausea. In 1913 Frazier²² operated on a patient for tinnitus but the operation was only moderately successful. Coleman and Lysterly, in their report of cases, commented that these early operations had not made sufficient impression at the time to bring the operation into general use, and they attributed this failure to an inadequate clinical conception of Ménière's syndrome. Subtotal or partial section of the vestibular portion of the acoustic nerve was first performed by McKenzie and described again by Dandy¹⁶ in 1933. In 1935 Dandy²³ reported his experiences in the treatment of bilateral Ménière's syndrome and advocated section of the vestibular portion of each nerve and stated that it was possible to perform such a procedure when it was possible to make a selective section of the nerve without impairing the hearing on either side.

Although the neurosurgeon has developed a technic for interrupting the vestibular impulses by an intracranial subtotal section of the acoustic nerve, otolaryngologists have accomplished the same effect by destroying the labyrinth. They usually resort to the use of an alcohol injection into the foramen rotundum or exenteration of the semicircular canals. They approach the field through the mastoid and the middle ear, and their procedure not only destroys the vestibular end organ but frequently impairs the cochlea, which produces deafness.

Putnam has employed destruction of the vestibular ganglion through an opening into the superior canal by a transtemporal approach, drilling the petrous portion of the temporal bone anterior to the petrosal sinus. He stated that this approach permits a cleaner and more anatomic dissection than does the approach through the mastoid and gives a more certain exposure of the canals. Finally it entails less danger of producing deafness than either of the other methods, since the middle and internal ear are left intact and the auditory nerve is not even within the field.

The otolaryngologists, by operation on the semicircular canals and by injections of alcohol, have reported successes, as has Putnam with the destruction of the vestibular ganglion. However, in comparing their

16. Dandy, W. E.: Ménière's Disease: Diagnosis and Treatment: Report of Thirty Cases. *Am. J. Surg.* 20: 693-698 (June) 1933.

17. Cairns, Hugh, and Brain, W. R.: Aural Vertigo: Treatment by Division of Eighth Nerve. *Lancet* 1: 946-952 (May 6) 1933.

18. Dandy, W. E.: Treatment of Ménière's Disease by Section of Only the Vestibular Portion of the Acoustic Nerve. *Bull. Johns Hopkins Hosp.* 53: 52-55 (July) 1933.

19. Ballance, C. A., in Allbutt, T. C.: *A System of Medicine*, ed. 1. London, Macmillan Company, 1899, vol. 7, p. 581.

20. Frazier, C. H.: Intracranial Division of the Auditory Nerve for Persistent Aural Vertigo. *Surg., Gynec. & Obst.* 15: 525-529, 1912.

20a. Ballance, C. A.: A Case of Division of the Auditory Nerve for Painful Tinnitus. *Lancet* 2: 1070-1073 (Oct. 10) 1908.

21. Frazier, C. H.: Remarks upon the Surgical Aspects of Tumors of the Cerebellum. *New York State J. Med.* 81: 272-280 (Feb. 11), 332-337 (Feb. 18) 1905.

22. Frazier, C. H.: Intracranial Division of the Auditory Nerve for Persistent Tinnitus. *J. A. M. A.* 61: 327-329 (Aug. 2) 1913.

23. Dandy, W. E.: The Treatment of Bilateral Ménière's Disease and Pseudo-Ménière's Disease. *Tr. Am. Neurol. A.* 61: 128-133, 1935.

results with the results obtained by Dandy,²⁴ Coleman and Lyerly, McKenzie, Olivecrona,¹⁸ Cairns and Brain, Munro²⁶ and others, it is evident that the intracranial total or subtotal section of the acoustic nerve has proved much more successful. In most instances, with intracranial section of the nerve the paroxysmal attacks of vertigo are eliminated. If not completely eliminated, the severity and the frequency of the attacks have been so ameliorated that the patient has been able to return to work. Total section of the nerve appears to be more effective than subtotal section of the nerve, which may be explained on the basis that occasionally a few vestibular fibers are overlooked unless the symptoms are initiated by a lesion in the nucleus or its central connection. A complete failure to relieve the symptoms by total section of the vestibular nerve may suggest that the lesion was bilateral or was situated on the side opposite to that operated on. Tinnitus may or may not be relieved by partial or total section of the eighth nerve, which again suggests that the lesion is situated centrally to the acoustic nerve. The temporary postoperative nystagmus and vertigo lend further weight to this hypothesis. If a total section of the nerve has been made, patients, although relieved of vertigo, often will complain of a difficulty in locating sound; that is, determining its projection without the aid of visual observation. The loss of hearing is frequently progressive with or without intracranial section of the nerve. However, there are many instances when hearing remains stationary irrespective of treatment. This may be explained by remissions that occur in the course of the disease.

Selection of Cases.—The indications for intracranial section of the acoustic nerve in Ménière's syndrome prior to introduction of the Furstenberg treatment have been based on the severity and frequency of the symptoms and the disability produced. Certain vocations demand accurate balance, which compels the patient to seek surgical relief. Other patients are so situated economically that they cannot afford the loss of time from illness and still others are unable to continue with a medical regimen at home.

The lateralization of the disease is not always easy to determine. The unilateral tinnitus and loss of hearing are pathognomonic signs, but oftentimes deafness and tinnitus are present bilaterally. The tinnitus and deafness are usually more severe on one side and occasionally the calorific tests indicate a unilateral vestibular disturbance. When these tests corroborate the signs of greater tinnitus and loss of hearing, one is assured of the side involved. The nystagmoid movements are not consistent with the side involved and nystagmus may be absent altogether. If the patient remembers on which side the tinnitus and loss of hearing began, the observation is of value in lateralizing the disease.

Surgical Technic.—The surgical technic as employed by all of us is very similar to that originally described by Dandy, Frazier and McKenzie, in that we utilize a unilateral suboccipital approach. One of us (Adson) prefers ether anesthesia, using the drop method over

an open mask held over a Magill intratracheal tube, which has been introduced after a preliminary anesthesia of nitrous oxide and ether, prior to placing the patient in the cerebellar upright headrest. The cerebellar upright position is preferred to the horizontal position, since the former affords a better exposure and less hemorrhage and an exposure of the cerebellar angle on a horizontal plane in line with the surgeon's vision. It also eliminates much of the suction and sponging as cerebrospinal fluid drains from the surgical field. One of us (Adson) employs the straight lateral incision in preference to the semicircular lateral scalp incision, for it is made more quickly and is closed more easily than other types and gives adequate exposure. A small suboccipital craniotomy is then made mesial to the mastoid, the dura is opened along the inferior border of the decompression and a strip of cotton is placed over the ninth, tenth and eleventh nerves in order to protect them during the operation. After the cerebellar lobe has been covered with strips of cotton, it is elevated with an illuminated retractor, which immediately exposes the eighth nerve that lies superficial to the seventh. With a small right angle hook the eighth nerve is separated from the seventh and is split either in the middle, as McKenzie has suggested, or slightly below the middle, prior to a section of the nerve close to the internal auditory meatus. We have been inclined to section the upper or cephalad five eighths of the nerve as suggested by Dandy in preference to sectioning of the upper half, believing that the greater section offered more assurance against subsequent slight attacks of vertigo. It is possible that the hearing is preserved better when only the upper half is sectioned. The closure is made on anatomic lines without drainage. The wound is covered with a small dressing and the patient is permitted to recline on pillows as soon as he has recovered from anesthesia and is encouraged to get up on the third day after the operation.

Surgical Results.—Our group of surgical cases is much smaller in number than those reported by other neurosurgeons because we have been interested in giving the medical regimen a thorough therapeutic test and because section of the eighth cranial nerve does not give an absolute guaranty of relieving the vertigo and but rarely relieves the tinnitus, although frequently this is reduced. Our series includes twenty patients, thirteen having had total unilateral sections of the eighth nerve and seven having had subtotal sections. There were five patients in our medical series that were operated on elsewhere. The follow-up study gave us an opportunity to evaluate the results, which will be commented on in our summary.

The records reveal that there were sixteen males and four females. The lesion was situated on the left side in twelve, on the right side in seven, and in one the symptoms were bilateral. The average duration of symptoms prior to operation was 4.3 years. The frequency of the attacks varied from several times during a day to one attack in every two or three days, to a series of attacks every two months. The usual paroxysmal attacks of vertigo lasted from two to three minutes, but in two cases it lasted several hours. In describing their attacks of vertigo only two of the patients described the phenomenon as a whirling sensation in clockwise fashion and two described it as in counterclockwise fashion. Those who complained of clockwise vertigo had lesions on the right side and the

24. Dandy, W. E.: Pathologic Changes in Ménière's Disease, J. A. M. A. 108: 931-937 (March 20) 1937; Ménière's Disease: Symptoms, Objective Findings and Treatment in Forty-Two Cases, Arch. Otolaryng. 20: 1-30 (July) 1934; footnotes 3, 15, 16, 18 and 23.
25. Olivecrona, Herbert: Ueber Ménière's Krankheit und ihre chirurgische Behandlung, Schweiz. med. Wchnschr. 68: 125-128 (Feb. 5) 1938.
26. Munro, Donald: The Surgical Treatment of Certain Repeated Explosive Attacks of Vertigo Occurring in the Absence of Any Demonstrable Etiology—Ménière's Disease: A Report of Fourteen Cases of This and Other Types of Aural Vertigo and Including One Case Involving Both Vestibular Nerves, New England J. Med. 216: 539-551 (April 1) 1937.

two who complained of counterclockwise vertigo had lesions on the left side. Nystagmus was present, although slight, in five cases. Patients frequently complained, during the interval between attacks, of apprehension and fear of a seizure of vertigo, although as a rule they were relatively free of all symptoms other than the tinnitus and impaired hearing. Three frequently had headaches and one complained of a variable amount of dizziness, which was completely relieved by total section of the eighth nerve.

Nine of the twenty patients had been placed on the medical regimen of a salt free diet and ammonium chloride prior to the operation when the eighth nerve was either totally or subtotally sectioned. Of the nine, five failed to get relief from medical treatment and four obtained only partial or temporary relief. The treatment extended over a period of from three to fourteen months. Five of the nine patients were relieved completely by section of the eighth nerve, four had 75 per cent of their symptoms relieved, and an occasional mild attack had recurred following the operation.

In analyzing the results of the surgical procedures we found that, of the thirteen patients who had complete unilateral section of the eighth nerve, nine had obtained complete relief of their vertigo, three had obtained great relief of vertigo, and one had obtained no relief. The tinnitus disappeared in two cases, was greatly relieved in two and slightly relieved, if at all, in seven, with no relief in two. Of the seven patients who had a subtotal section of the eighth nerve, four were completely relieved of vertigo, three greatly relieved of vertigo and the hearing was maintained in these three cases. The loss of hearing in four of these cases was either complete after the operation or it continued to fail. The tinnitus disappeared in two and was moderately relieved in one and was slightly relieved, if at all, in four.

At the time of operation two patients had unusually large internal auditory arteries, and two patients had accessory arterial loops wrapped about the eighth and seventh nerves. The arterial loops were continuations of the anterior inferior cerebellar arteries. In one instance the vestibular and cochlear portions of the nerve were separated as a Y at the entrance of the internal auditory meatus.

The postoperative study of the five patients operated on elsewhere revealed that one patient had been completely relieved of vertigo and tinnitus after section of the nerve. This patient stated that he was unable to take ammonium chloride because it nauseated him and prevented him from eating. The second patient stated that there was some improvement in the vertigo and that the attacks were less severe but that the tinnitus continued. The third patient said that she received no relief from her vertigo or tinnitus and was told postoperatively that her failure to obtain relief was due to nervousness. The fourth patient was relieved for three months and then continued to have an occasional attack which subsequently was controlled by a salt-free diet. The fifth patient had an anomalous vascular lesion of the inferior anterior cerebellar artery. This patient stated that his violent attacks of vertigo had disappeared but that he had continued to remain dizzy and had been unable to work.

In evaluating the results of nerve section in the treatment of the symptoms of Ménière's syndrome, we were anxious to learn the patient's reaction to the operation and to determine how many were able to return to

their former vocation. Six patients of the twenty were completely free from all symptoms, eleven stated that they were relieved of more than 75 per cent of their symptoms, two were only partially relieved, and one obtained no relief at all. Fifteen stated that they were able to resume their regular work, five complained that they were unable to resume their regular work; three of these were women of a highly nervous temperament. One patient was a man who was much concerned about industrial compensation, and the fifth was an extremely apprehensive individual.

In reviewing the literature as well as our own cases, it is apparent that a subtotal section of the nerve is preferable to a total section; however, there are instances when one is justified in carrying out a total section. The indication for such a procedure would be when the hearing is practically lost and when there is a desire to relieve the tinnitus to a maximal extent. Crowe²⁷ stated that examination of seventy-two patients postoperatively who had had subtotal sections of the eighth nerve by Dandy, with an average lapse of 2.2 years, revealed that the deafness in the affected ear was worse in 30.5 per cent of cases, was unchanged in 50 per cent and was improved in 19.5 per cent. It would appear from a review of our own cases that total section of the eighth nerve is more effective than subtotal section in relieving the tinnitus, but, unfortunately, no definite assurance can be given to the patient. As a general rule the patient can be assured that tinnitus will be partially or totally relieved. Reduction of the tinnitus makes it possible for the patient to hear more distinctly in a number of cases.

The review of our patients under a medical regimen suggests that remissions occur without any specific treatment and that the remissions have continued to the extent that a cure is suspected. The review further suggests that reduction of the sodium content in the body, by means of the low salt-free diet, is effective in relieving symptoms. The administration of ammonium chloride or potassium nitrate in conjunction with the salt-free diet offers additional relief. It is apparent that all medical regimens may fail and that section of the vestibular portion of the eighth cranial nerve will relieve the vertigo when the medical treatment fails. However, there are instances in which total or subtotal section of the nerve also fails to give relief. This might be explained on the basis of improper diagnosis or selection of a patient whose numerous functional complaints shadow the real symptoms of Ménière's syndrome.

SUMMARY

It is our impression that section of the vestibular portion of the acoustic nerve is the most effective measure for the relief of symptoms of Ménière's syndrome.

The medical measures have proved of value and the patient should be given a choice of treatment if he is so situated economically as to afford hospitalization, more or less continuous medical care, and the loss of time if additional attacks of vertigo appear.

The patient should be urged to have the operation if the medical regimen proves ineffective.

The patient should be advised to choose the operation in preference to the medical regimen if his vocation precludes attacks of vertigo or if his economic status does not permit of loss of time from labor or the comfort of hospital care or prolonged medical treatment.

27. Crowe, S. J.: Ménière's Disease: A Study Based on Examinations Made Before and After an Intracranial Division of the Vestibular Nerve, *Médecine* 17:1-35 (Feb.) 1938.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. TALBOTT AND BROWN AND
DRs. WALSH AND ADSON

DR. F. D. LATHROP, Ann Arbor, Mich.: I believe that these observations are decided advances in the formulation of a rational method of therapy in the treatment of Ménière's syndrome. Naturally the mode of therapy instituted in the treatment of any particular disease entity should be that form which deals most effectively with the etiology. The etiology of Ménière's symptom complex is unknown, although there is evidence which suggests that it is related to disturbances of mineral metabolism. I entertain the idea that a pathologic lesion exists within the involved labyrinth which allows the accumulation or retention of sodium ions, thus producing chemical or pressure alterations within the internal ear resulting in the attacks of vertigo. I agree with Drs. Talbott and Brown that the gross retention of water or sodium by these patients is not of significance and also that the blood sodium determination may be within normal limits. However, one must not overlook the fact that the blood sodium level of patients with severe Addison's disease may be within normal limits. Yet the cortex of the adrenal glands is said to control the metabolism of sodium in the body. With this point in mind it should be obvious that the slight retention of sodium which may occur in the labyrinth of patients suffering from Ménière's syndrome would not in all probability be reflected in the blood sodium determination. I have studied potassium metabolism in nephritis and Ménière's syndrome and have not found potassium to be a reliable diuretic. Diuresis may occur when potassium is administered but to a much less extent than that obtained with a neutral diet and ammonium chloride. Furthermore, when a patient follows such a regimen he excretes not only water and sodium but also potassium. This is somewhat incongruous to the observation of Drs. Talbott and Brown that the administration of potassium benefits patients suffering from Ménière's syndrome. I agree with Drs. Walsh and Adson that spontaneous remissions do occur in patients suffering from Ménière's symptom complex. I have seen cases in which the attacks of vertigo have disappeared entirely without the institution of any type of therapy whatever. I also agree with the statement that patients afflicted with Ménière's syndrome are entitled to a thorough trial on the medical regimen before contemplating section of the eighth cranial nerve when circumstances allow this program.

DR. JOHN H. TALBOTT, Boston: I believe that the most important conclusion that has come from this discussion on Ménière's syndrome is the agreement between medical and surgical neurologists that prolonged medical treatment should precede surgical intervention. Since the study was started at the Massachusetts General Hospital more than two years ago we have not operated on a single patient with this disease. In a much larger series than ours, Drs. Walsh and Adson have operated on less than 10 per cent of their group. It appears further from the discussion by Drs. Walsh and Adson that several of those treated surgically were not benefited appreciably. We have been interested in the use of potassium chloride because it may be employed with an otherwise normal diet. The advantages of a normal diet over a low sodium diet with ammonium chloride are obvious. Many of our clinic patients at the Massachusetts General Hospital are of foreign extraction and have limited resources. It is practical for them to add a small amount of potassium chloride to their regular diet and impossible frequently to expect them to follow a low sodium regimen. An inexpensive method of administering potassium is a 25 per cent aqueous solution of potassium chloride. One teaspoonful of such a preparation contains about 1 Gm. of salt. One teaspoonful of the aqueous solution is given with water or other fluid from six to eight times a day. The majority of patients tolerate potassium chloride without any gastrointestinal or other disturbances. I recall only one patient who objected strenuously to prolonged ingestion of this medicine. This patient was suffering from cardiac decompensation as well as Ménière's syndrome and was unable to take adequate amounts without complaining of indigestion. We have not made any claims for potassium chloride in the treatment of acute idiopathic vertigo

but several patients who have been studied experimentally have been relieved of distressing symptoms.

DR. M. N. WALSH, Rochester, Minn.: I have been asked about the dosage of potassium nitrate which we used. We have requested the patients to take 9 Gm. of potassium nitrate enteric coated tablets daily, taking the medicine for three days and discontinuing it for two days.

DR. A. W. ADSON, Rochester, Minn.: The economic condition of the patient has a great deal to do with the selection of treatment. We have leaned toward the medical treatment. However, there are patients who are unable to obtain medical treatment or prolong its use. For instance, I recall an engineer who emphatically stated "The medical treatment is all right but I am unable to take it." So that there are occasions when the economic status of the individual compels one to select the surgical treatment instead of giving medical management a trial. I believe that subtotal section of the eighth nerve is the one most useful procedure and I do not believe that the medical treatment should be prolonged indefinitely unless the potassium chloride will do more than we have been able to accomplish in our own medical series. It should be remembered that surgical treatment relieves a number of patients who failed to obtain relief by medical management.

Clinical Notes, Suggestions and New Instruments

SUBACUTE YELLOW ATROPHY OF THE LIVER DUE TO "SOLVENT"

LEO E. BRAUNSTEIN, M.D., SCHENECTADY, N. Y.

Not so long ago the field of industrial medicine was limited to a few salaried physicians or to a small group of physicians in private practice who were more or less favored by the industrial concerns or the insurance carriers. However, since legislation has made it possible for the injured employee to have free choice of physician, the field of industrial medicine and surgery has been opened to the profession at large. As a result of this change, most physicians come in contact with industrial accidents and occupational diseases more frequently than heretofore. Many of the older occupational diseases are common and well known to all of us, but there are a few cases which we see only occasionally and some cases which we see rarely; with regard to these it becomes our duty as professional colleagues to acquaint one another with what we think is valuable.

My particular interest in this paper concerns the hazards of the cleaning and dyeing industry, especially with the types of solvents that are used in this business. Some of the common solvents used are chloroform, carbon tetrachloride, naphtha, benzene, alcohol, ether, acetone, gasoline and related products. The role of the chlorinated hydrocarbons is well established as an etiologic factor in diseases of the liver, which range from mild acute hepatitis to acute yellow atrophy with death. It is also well established that petroleum and its derivatives, gasoline, benzene, naphtha and other distillates, have a toxic effect on the central and peripheral nervous system, inducing symptoms ranging from mild neuritis to coma with death.

The medical literature of this country and abroad mentions only two definite cases of liver damage in which the cause was exposure to a petroleum product. In 1919 Haden,¹ at Johns Hopkins Hospital, reported a case of chronic benzene poisoning with jaundice, enlargement of the liver, anemia, traces of albumin in the urine and bile in the stools. In 1934 Nunn and Martin² reported a series of seventy-two cases of gasoline and kerosene poisoning by ingestion or aspiration, with one case showing fatty degeneration of the liver at autopsy. Physicians in this country recognize the effects of petroleum products on the central and peripheral nervous system but have been too conservative in realizing that these same products can produce pathologic changes in other parts of the body such as the

1. Haden, R. L.: Benzene Poisoning with Report of a Chronic Case. *Bull. Johns Hopkins Hosp.* 30: 309-310 (Oct.) 1919.

2. Nunn, J. A., and Martin, F. M.: Gasoline and Kerosene Poisoning in Children. *J. A. M. A.* 103: 472-474 (Aug. 18) 1934.

gastrointestinal tract and the hemopoietic, cardiovascular and respiratory systems. In 1933 Vigdortschik³ reported his observations of the effects of chronic benzene poisoning on 451 rubber workers, 412 weavers and 384 cigaret makers. Gastrointestinal symptoms were observed in from 34.3 to 37.5 per cent, the hemoglobin content of the blood varied between 64.8 and 66.1 per cent, the average erythrocyte count was 3,600,000, and the average leukocyte count was 6,700. Skin disorders were observed in from 2.7 to 4.9 per cent. In this series from 42 to 70 per cent showed nervous symptoms, from 33.5 to 39.8 per cent showed cardiac symptoms and from 40 to 48.8 per cent showed pulmonary symptoms. In 1934 Frumina and Fainstein⁴ studied the effects of benzene exposure in the rubber industry, where the men were subjected to blasts of benzene vapor from driers in a raincoat factory. They reported that 93 per cent showed nervous symptoms, the average hemoglobin content of the blood was 75 per cent and the total count of erythrocytes was decreased to 43.1 per cent. In 1932 Feil⁵ studied the effects of benzene poisoning and found, in addition to nervous symptoms, anorexia, gastralgia, nausea, vomiting and hematemeses. The blood showed reduction in the number of erythrocytes and increased coagulation time. There were also gingival and uterine hemorrhages. Hamilton⁶ cited Korschewsky, who found chronic bronchitis and anemia very common not only among workmen but also among officials in the oil fields at Baku; she also cited Petkevitch, who discovered chronic anemia and nervous disease among these men. According to Hamilton,⁶ Lewin, one of the foremost German toxicologists, came to the United States to observe workmen in the oil wells of Pennsylvania and the refineries on the Jersey coast. In 1888 he published an account of his investigations. This article stimulated the American physicians, and shortly thereafter Mitchell⁷ and Sharp⁸ published reports on the general and local effects of petroleum. Hamilton⁶ cited Kolsch, who reported that long-continued exposure to benzene causes anemia as well as nervous symptoms. He also held that hemoptysis and albuminuria can occur and can persist for some time. Hamilton also stated that she received reports from Smithies⁹ in which he mentioned anemia and increased fragility of the erythrocytes. Smithies reported a case of a young woman, a chemist who conducted research in petroleum distillates for several months, after which she developed anemia with 45 per cent hemoglobin and an erythrocyte count of 3,600,000. Askey¹⁰ reported a case of aplastic anemia due to benzene poisoning. Schustrow and Salistowskaja¹¹ in 1926 reported the results of experiments on rabbits and guinea pigs that were subjected to inhalation of purified petroleum benzene. They found emaciation, aplastic hemolytic anemia, increased fragility of the erythrocytes and leukopenia. They explained the toxic effects by the action of the substance on the lipoids of the blood and expressed the belief that the damage is greater by inhalation than by ingestion. All of the foregoing reports substantiate the fact that the distillates of petroleum, especially the volatile group, have definite deleterious effects on the various systems of the body. These effects include, for the nervous system, drowsiness, lethargy, apathy, neurasthenia, intoxication, neuroses, amnesia, psychoses, paralyzes, parasthesias, anesthetics, convulsions, tremors, depressive or manic states, coma and death; for the muscular system, weakness, myasthenia and atrophy; for the respiratory system, general irritation, cough, bronchitis, hemoptysis and pulmonary edema; for the cardiovascular system, depression, failure, edema and collapse; for the gastro-

intestinal system, anorexia, gastralgia, nausea, vomiting, hematemeses, hepatitis, pancreatitis, diarrhea and bloody stools; for the hemopoietic system, cholemia, anemia, uremia and hyperglycemia; for the genito-urinary system, nephritis, albuminuria, glycosuria and metrorrhagia.

The substance with which I am concerned in this report is known as "solvent" or "Stoddard's solvent" in commercial parlance. The term "solvent" is not descriptive of the substance and does not convey any idea of its nature. In the fractional distillation of petroleum, volatile gases such as hydrogen, methane and ethane are removed first. Then purified petroleum benzene is boiled off between 40 and 70 C.; from 70 to 90 C. gasoline is distilled; from 90 to 120 C. naphtha is distilled; between 120 to 150 C. benzene is distilled; from 150 to 170 C. "solvent" is distilled; from 170 to 300 C. kerosene is distilled, and beyond that point the heavy lubricants and paraffin are removed. So it is seen that "solvent" is closely related to benzene, there being a difference of only 20 degrees C. in the boiling point. Hence it is apparent that it would be possible for this "solvent" to produce effects similar to those of benzene. Chemical analysis of the "solvent" was performed for me by the Bender Laboratories in Albany, N. Y. The chemist's report showed that this "solvent" volatilizes between 152 and 178 C. Qualitative tests for aldehydes, ketones, alcohol, organic acids and esters are negative. It contains no chlorine. There is no residue on evaporation, and the liquid burns with a smoky flame. It is identical with decolorized and deodorized gasoline of low volatility. Because of its lower flash point, it is much safer than gasoline from the standpoint of fire prevention. In other words, it is a distillate of petroleum to which nothing has been added or removed and which because of its relative safety is used in large quantities. For ordinary household uses it is sold in gallon lots, and the housewife does her own cleaning with impunity, as she uses it in small quantities and then only occasionally. But in the cleaning establishment it is used in large quantities continuously, and it is this exposure which may affect the person who handles it.

REPORT OF CASE

On March 25, 1938, a man presented himself at my office because of yellow skin and vomiting spells. On January 1 he went to work at the cleaning and dyeing factory, where his duties were to put clothing into the churners and remove them by hand. He controlled three large churners, each consisting of a horizontal cylinder about 10 feet long and 4 feet in diameter. He circulated from one cylinder to the other, his hands being immersed or wet with the "solvent" during most of his working time. The room in which he worked was usually about 8 degrees warmer than any of the other rooms in the plant. With the exception of a large electric fan, there was no special apparatus for ventilation and purification of the air. Hence the patient was exposed to the fumes daily. Within two weeks he developed a follicular dermatitis of the hands and forearms, with redness and roughness of the skin and dehydration with desquamation around the hair follicles. This persisted from the time of its appearance until he came to see me. Within three or four weeks he noticed that when he came to work and inhaled the fumes he would feel nauseated and have gastric discomfort. During the week before he saw me yellow color of the skin and eyes developed, and he had four or five vomiting spells. He had lost about 6 pounds (3 Kg.) in weight during the preceding two months and was beginning to lose his strength. He smoked very little, drank hardly any alcoholic beverages, had no history of venereal disease and had been in good health up to the present time. The family history was negative for tuberculosis, syphilis, heart disease, kidney disease, diabetes and cancer.

The patient was well developed and well nourished, 26 years old and 5 feet and 8 inches (173 cm.) tall, weighing about 135 pounds (61 Kg.). He was ambulatory; there was scleral and cutaneous jaundice. Despite the jaundice, one could detect the early pallor of anemia. He was anxious but not uncomfortable. Routine physical examination revealed no pathologic change of the ears, nose or throat. The scleras were jaundiced but otherwise ocular examination was negative. There were no palpable glands in the neck. The heart and lungs showed no abnormality. On inspection, the abdomen was normal except for the cutaneous jaundice. Palpation revealed the edge of the liver

3. Vigdortschik, N. A.: Zur Frage der chronischen Benzinwirkung auf den Organismus, *Zentralbl. f. Gewerbehyg.* 20: 219-222 (Nov.-Dec.) 1933.

4. Frumina, L. M., and Fainstein, S. S.: Zur Benzintoxikologie, *Zentralbl. f. Gewerbehyg.* 21: 161-165 (Sept.-Dec.) 1934.

5. Feil, André: Les intoxications professionnelles par la benzène et le benzol, *Presse méd.* 40: 1973 (Dec. 28) 1932.

6. Hamilton, Alice: *Industrial Toxicology*, New York, Harper & Brothers, 1934, pp. 180-228.

7. Mitchell, J. K.: General and Local Effects of Paraffin Oil, *M. News* 53: 152-154 (Aug. 11) 1888.

8. Sharp, W. H.: The Poisonous Effects of Petroleum, *M. News* 53: 150-152 (Aug. 11) 1888.

9. Smithies, Frank: Gastroduodenal Hemorrhage, *Ann. Int. Med.* 1: 637 (March) 1928.

10. Askey, J. M.: Aplastic Anemia Due to Benzol Poisoning, *California & West. Med.* 29: 262 (Oct.) 1928.

11. Schustrow, N., and Salistowskaja, E.: Benzene Poisoning, *Deutsches Arch. f. klin. Med.* 150: 27 (Feb.) 1926; *abstr. J. A. M. A.* 56: 1254 (April 17) 1926.

about 2 cm. below the costal margin on the right side. No enlargement could be detected to the left. The spleen could not be felt. There were no other enlargements or masses in the abdomen and groins and no tenderness or muscle rigidity. The extremities and the reflexes were normal. Physical examination of the central nervous system yielded no positive information.

On March 27 the patient was admitted to the Ellis Hospital for detailed observation. Three days after admission to the hospital the x-ray and laboratory reports were as follows: Flat x-ray plate of the abdomen negative; blood Wassermann reaction negative; bile present in the stools; dextrose tolerance test, one hour 200 mg., one and a half hours 230 mg., two hours 250 mg., four hours 143 mg. This shows decreased sugar tolerance. The icteric index was 32. In the fragility test, hemolysis began in a 0.4 per cent solution and was not complete at 0.28 per cent, showing a decidedly increased resistance of the erythrocytes. The urine showed a trace of albumin, a trace of sugar and urobilin. Subsequent blood tests revealed the following icteric indexes: two days after admission, 94 in the morning and 106 in the afternoon; four days later 27.5, seven days later 13, twelve days later 18, eighteen days later 21, twenty days later 7.8, twenty-nine days later 6.6, thirty-nine days later 7 and two months later 6. All times are calculated from the date of the first test; the values of bile retention show a high level of 106 on the fourth day after admission to the hospital, with a gradual return to normal within three weeks. On Feb. 7, 1939, almost one year after the onset of the illness, the icteric index was 10; on February 29, 10, and on April 5, 7. This test was done according to the Bernhard and Maue modification of Meulengracht's method, in which it has been found that the normal limits are between 2.5 and 5, with an average of 3.6. According to this determination the patient still showed some latent jaundice with possible permanent liver damage. The blood picture on two examinations in the first week showed a total red count of 4,000,000; total white of 7,000, 80 per cent hemoglobin and some anisocytosis. Ten days later the total red count was 4,200,000 with 72 per cent hemoglobin. The blood cholesterol level was 166 mg., blood sugar 111 mg. and urea nitrogen 114 mg. A scratch test with the "solvent" on the forearm produced a large wheal, and the control was negative. On April 23 the patient's condition was sufficiently improved for him to be discharged from the hospital. On May 10 x-ray visualization of the gallbladder was negative. The x-ray department was reluctant to give intravenous dye for gallbladder function tests in the presence of jaundice; consequently the tests were delayed until the patient improved.

The various positive results indicated obstructive jaundice, originating in the parenchyma of the liver. A hemolytic factor may have contributed to the anemia and jaundice.

The albumin in the urine may have been due to toxic nephritis, to the presence of bile in the urine or to both. The sugar in the urine was attributed to the decreased sugar tolerance in general and possibly also to toxic pancreatitis. The occult blood in the stools was interpreted as a result of petechial hemorrhages into the mucosa of the gastrointestinal tract. The anemia was produced by the direct action of the "solvent" on the blood and the hemopoietic system. The swelling of the liver which was present is usually found in the early stages of toxic hepatitis, or yellow atrophy of the liver. The negative x-ray observations were significant because they eliminated the extrahepatic biliary system as a source of pathologic alteration. Although there were abnormal changes in the blood, these were not potent enough to produce the marked degree of bile retention in the body, hence it could only be interpreted as caused by intrinsic liver changes. Throughout the course of the disease, the temperature, pulse and respiration remained normal. The patient had no pain in the abdomen during the entire period of illness. During his confinement to the hospital, the jaundice disappeared almost completely, and appetite and digestion were improved. He gained 6 pounds (2.7 Kg.); the pallor, weakness and tiredness disappeared. The dermatitis disappeared within three weeks and has not recurred at the time of this report. To all intents and purposes the patient was improved.

TREATMENT

The treatment was for the most part symptomatic. The patient was given a low fat diet, with fluids freely supplied.

Calcium was administered intravenously in the form of a 10 per cent solution of calcium gluconate, 10 cc. being given twice daily. Insulin was administered to keep the urine sugar free. I feel that the most important single factor contributing to the patient's recovery was his removal from his occupation.

COMMENT

A young man presents painless jaundice, muscular weakness, loss of weight, dermatitis on the hands, anemia, gastrointestinal disorders, albuminuria and glycosuria. The only positive factor in the history is three months' exposure to "solvent" in a dry cleaning factory. The physical examination, laboratory data, course of the disease, and the subsequent improvement following the patient's removal from his employment, with no recurrence up to the present time, indicate general toxemia affecting principally the liver and, in addition, the blood, kidneys, pancreas, gastrointestinal tract and muscular system. I was impressed by the fact that I was confronted with a case of subacute yellow atrophy of the liver with an unusual origin. It has been considered safe to use "solvent" in large quantities, and the employees handle it with impunity. Knowing that any volatile solvent can affect the body, I realize that this "solvent," apparently innocuous, can produce serious disorders, and I recognize this new hazard.

SUMMARY

A case of subacute yellow atrophy of the liver, with recovery, was due to a petroleum distillate known as "solvent." According to the medical literature it is rare for petroleum products to cause liver disorders. They usually have an affinity for the central and peripheral nervous systems and occasionally for the blood. I believe that the medical profession and the industry should be aware of such possibilities so that this hazard may be recognized and treated.

2014 Eastern Parkway.

ALLERGIC DEATH DUE TO INTRAVENOUS USE OF DIODRAST

SUGGESTIONS FOR POSSIBLE PREVENTION

LEO P. DOLAN, M.D., TOLEDO, OHIO

Numerous toxic effects of varying severity following the use of contrast solutions in urography have been reported. Crane,¹ in reporting sudden death after the intravenous injection of 30 cc. of diodrast solution stated that in five cases found in the literature death was allegedly due to the use of intravenous contrast mediums in urography. One or possibly two of these may not, he thought, have been directly due to the solution. In discussing Crane's paper one physician was inclined to be skeptical of the cause of the reaction. He referred to the large number of injections used at his institution for intravenous excretory urography without occurrence of any severe reactions. Another discussor pointed out that in the recent work of Robb and Steinberg² in visualizing the chambers of the heart, a 70 per cent diodrast solution was rapidly administered intravenously to produce arterial and cardiac roentgenograms and no fatal reactions were recorded.

It is common knowledge that reactions, even deaths, have been commonly reported as following the routine intravenous use of ordinary drugs. Few physicians have escaped a reaction of some kind from intravenous medication.

A woman aged 65 had suffered from renal colic on the left side for several hours. One half grain (0.03 Gm.) of morphine and $\frac{1}{150}$ grain (0.4 mg.) of atropine did not relieve her of pain. A roentgenogram of the urinary tract revealed a small shadow, less than 0.5 cm. in size, in the area of the lower part of the left ureter. A ureteral catheter, size 6 F., was passed beyond this point. After the withdrawal of 35 cc. of urine through the catheter, the pain was relieved. The catheter was fixed in place; however, it was accidentally withdrawn during the night with some recurrence of the pain but not sufficient to require an analgesic.

Read before the annual meeting of the North Central Section of the American Urological Association, Indianapolis, Sept. 25-26, 1939.
1. Crane, J. J.: Paper read before the annual meeting of the American Urological Association in May 1939; *J. Urol.*, to be published.
2. Robb, G. P., and Steinberg, Israel: *Am. J. Roentgenol.* 41:1 (Jan.) 1939.

The following morning another film revealed the shadow to be somewhat lower in the pelvic portion of the ureter and it was decided to obtain an intravenous excretory urogram in order to establish the degree of function and drainage of the left kidney. If function and free drainage were present, further instrumentation was to be temporarily withheld in the hope that the calculus would pass into the bladder unassisted.

It has been my practice to inject only 3 cc. of diodrast solution slowly and then wait a full minute for any sign of reaction. If none appears, the remaining solution is injected slowly over a period of five minutes. On several occasions injection has not been completed because of evidence of slight respiratory embarrassment.

In this case, at the time of the pause, after the injection of only 3 cc. of diodrast solution, the patient's face first became dark red and respiratory embarrassment developed as if she were choking. The face rapidly turned black. Artificial respiration was immediately instituted, an airway was passed into the trachea, and within two minutes oxygen was being administered by an anesthetist. With a stethoscope heart tones could be heard, but only faintly. Epinephrine and caffeine with sodium benzoate were administered intravenously, and finally epinephrine was injected directly into the heart. All this was of no avail; the patient died.

Later the information was obtained that for twenty years the patient had suffered from rather severe intermittent attacks of bronchial asthma which simulated to a lesser degree this fatal attack. Permission for autopsy was not obtained, but the conclusion was that this allergic patient apparently had an allergic or anaphylactic death due to the intravenous administration of only 3 cc. of diodrast solution. This fact was reported at once to the manufacturers of the medium with the exhortation that they include in their literature the statement that asthma or iodine sensitivity is a contraindication to the intravenous use of diodrast or skioldan. This took place more than a year ago, but until this paper was read I had seen no literature which warned against asthma or drug allergy as a contraindication to the use of these products.

Cutaneous tests are known to be of no practical value in determining sensitivity to drugs, and this holds true for urographic mediums. In order, therefore, to guard against the repetition of such a tragic occurrence as herein reported, I now make a thorough search of the patient's allergic history for any apparent signs of sensitivity or allergic manifestations. If a history of allergic sensitivity of any kind is obtained, I attempt to determine sensitivity to the medium employed by having the patient hold 1 or 2 cc. of it in the mouth for ten minutes. If no sign of reaction occurs at the end of this period, the patient is then instructed to swallow the solution held in the mouth. After thirty minutes a check is made for possible reactions. If none have appeared in this time, I proceed in a routine way with the intravenous administration.

In one known case of iodine sensitivity, a severe reaction occurred with this procedure within three minutes after the patient had taken the solution into the mouth. I immediately had the patient expectorate the solution and then rinse out the oral cavity with water. The reaction that occurred was characterized by a sensation of numbness which started around the lips and rapidly extended over the entire face. The tongue gave the sensation of filling the mouth and affected the respiration. Epinephrine was used in ordinary solution and in a few minutes was given in oil solution. An hour later comparative comfort ensued. The numbness of the lips, however, lasted more than five hours. These were the same symptoms this patient had experienced a year previously, after having taken 2 grains (0.13 Gm.) of potassium iodide for bronchitis. At that time, however, the symptoms remained for a much longer period and were associated with dermatitis medicamentosa.

SUMMARY AND CONCLUSION

A fatality in a woman of 65 followed the intravenous administration of 3 cc. of diodrast for contrast urography. This substance is potentially dangerous, especially in cases of asthma or iodine sensitivity. A method for guarding against it is in use.

1052 Edison Building.

Council on Physical Therapy

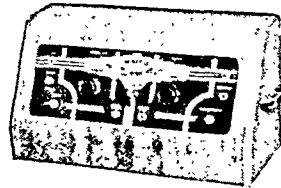
THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
HOWARD A. CARTER, Secretary.

MAICO AUDIOMETER, MODEL D-5, ACCEPTABLE

Manufacturer: The Maico Company, Inc., 83 South Ninth Street, Minneapolis.

The Maico Audiometer, Model D-5, is designed for the measurement of the acuity and range of hearing. The unit weighs 24½ pounds and is 17 by 10 by 8 inches in size.

Eleven fixed frequencies from 64 to 11,584 cycles per second are provided, as shown in the accompanying table, which also gives the intensity range of each test tone above the normal threshold.



Maico Audiometer, Model D-5.

The unit is calibrated in 5 decibel steps. Phones are separately calibrated and each instrument is adjusted for use with a particular phone. Separate output connections are provided for bone and air conduction. A masking device may

be obtained also having an intensity output of about 50 decibels. A crystal microphone and a dynamic type receiver with stable characteristics are employed. Records are made of the output of each receiver and recorded against the serial number of the instrument to which it is matched, so that it can be replaced and

Frequencies Provided and Intensity Range

Test Tone Cycles per Second	Intensity Range Decibels
64	65
128	70
256	80
512	100
1,024	100
2,048	100
2,896	100
4,096	100
5,792	80
8,192	80
11,584	70

duplicated from records kept of the particular audiometer purchased. Separate units are supplied for alternating and direct current. With the exception of the tubes, the Maico instrument is guaranteed for one year.

A number of these units were submitted to a laboratory acceptable to the Council for testing. The "Proposed Minimum Specifications of the American Standards Association (December 1, 1937)" were followed by the laboratory as a guide in preparing the following report. These standards of the American Standards Association are comparable to the "Minimum Requirements for Acceptable Audiometers" adopted by the Council (THE JOURNAL, Feb. 25, 1939, p. 732).

Tests were conducted by operating the audiometers with 60 cycles alternating current at 115 volts. The instrument complied with the specifications in the following respects:

1. Range of frequency of test tone.
2. Control of intensity.
3. Accuracy of frequency.
4. Audiometer calibration.
5. Purity of tone.
6. Extraneous noise.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Maico Audiometer, Model D-5, for inclusion on the Council's list of accepted devices.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 13, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need; for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

EPITHELIAL FUNCTIONAL REJUVENATION AND ITS SIGNIFICANCE

Amid the usual cells of the epithelial lining of the alimentary tract peculiar cells are present which possess the power to reduce metallic salts and which are commonly known as argentaffin cells. It is generally held that these cells are of entodermal origin but their exact source remains unknown. Their function has been linked with metabolism of carbohydrates, production of secretin, secretion of epinephrine, formation of anti-anemic factor, digestion, and absorption. Actually, not a single concept pertaining to their function can stand objective criticism. In closing their review on this subject, the Macklins¹ conclude that the most that can be said of the function of these cells is that we know nothing about it.

1. Macklin, C. C., and Macklin, M. T.: *The Intestinal Epithelium*, in Cowdry, E. V.: *Special Cytology: The Form and Functions of the Cell in Health and Disease*, ed. 2, New York, Paul B. Hoeber, Inc. 1: 233, 1932.

Popoff² has recently studied this problem by using new histochemical methods which permit him to trace the genesis and metamorphosis of the argentaffin cells. He concludes that they originate from mucous (goblet) cells in the intestine and from parietal, cardiac and pyloric cells in the stomach. According to his studies the mucous cells of the intestine and the parietal cells of the stomach function for a long time, passing many times through successive and repeated phases of secretion. When finally the secreting cell reaches the stage of functional exhaustion it does not perish but becomes refractory, loses its response to normal and artificially applied stimuli and undergoes a rearrangement or cytomorphosis manifested by certain nuclear and cytoplasmic changes, the latter being manifested by the appearance, progressive accumulation and gradual disappearance of argentaffin substance. In the course of this metamorphosis the cell changes its position, dedifferentiates and returns eventually to the state of a normal secreting cell. The specific metamorphosis is not related to the elaboration of exocrine or endocrine secretion. The biologic ability of certain highly differentiated secreting cells to maintain their longevity and usefulness by cyclic returns, when functionally exhausted, to their primitive afunctional state, followed by return to their original functional efficiency, is called functional rejuvenation by Popoff. The phenomenon is of paramount importance in restoring functionally exhausted mucous and parietal cells to their normal state of function. The ability to rejuvenate makes unnecessary continuous replacement of worn out cells by means of regeneration and makes understandable the discrepancies—so far unexplainable—between the scarcity of cellular regeneration and the wear and tear to which the cells of the alimentary tract are subjected continuously.

When, from local or general causes, the functionally exhausted cells are unable to rejuvenate, they degenerate. Then regeneration is called on to replace the dead elements; when unchecked, such regeneration may take the course of a neoplastic process. This interference with rejuvenation explains the scarcity or absence of argentaffin cells in intestinal areas above obstruction, in constipation, in ulcerative colitis, in nutritional deficiencies, in pernicious anemia and in advanced age. The argentaffin cells or, as Popoff calls them, rejuvenocytes, are found in carcinoid tumors, in benign solitary polyps and in some areas of highly differentiated destructive adenomas. Their presence is a good sign, indicating that the life of the tumor is perpetuated by cellular rejuvenation and explaining the scarcity of regeneration (mitoses) in such relatively benign tumors. Whenever there are in tumors mucous cells capable of function and of rejuvenation there are found argentaffin cells. This makes understandable the fact that these cells are found even in such distant tumors as

2. Popoff, N. W.: *Epithelial Functional Rejuvenation Observed in the Mucous Cells of the Gastrointestinal Tract and the Parietal Cells of the Stomach*, Arch. Path. 27: 841 (May) 1939.

pseudomucinous cysts and teratomas of the ovary.³ The concept of functional rejuvenation offers new and important information about the cytology of the gastrointestinal tract and it aids the understanding of a number of physiologic and pathologic problems connected with the digestive system.

FREQUENCY OF CONGENITAL MALFORMATIONS IN FAMILIES

Little is known concerning the predisposition of families toward congenital defects. Murphy¹ in Philadelphia studied the families of those whose names appeared on death certificates with a diagnosis of congenital malformation during the five year period 1929-1933. During this period there were 130,132 deaths and stillbirths from all causes. Among the certificates 1,476 recorded congenital malformations, of which 890 were adequately confirmed. From analysis of the information obtained it was concluded that gross congenital malformations, as recorded on death certificates, afflict approximately one of every 213 individuals who are born alive. About a quarter of those born congenitally malformed are stillbirths. The malformation rate is about twice as high in white persons as among Negroes. In this series the frequency of birth of subsequent malformed offspring was twenty-five times greater in families already possessing a malformed child than in the general population.

Relation was not demonstrated between frequency of malformation and such factors as illegitimacy, economic or social status, chronic illness at the time of conception, pelvic disease prior to conception, season of the year, health of the mother or placenta praevia. The older the mother, however, the more likely was she to give birth to a congenitally deformed child. The later born children in a family are more likely to be congenitally malformed than are the first born. The malformed child is less likely to go to term than the normally developed sibling. Periods of relative sterility are likely to precede the births of congenitally malformed children. In families possessing two or more malformed children, the defects in the subsequent offspring are identical with those in the previous defective in approximately 50 per cent of instances. The diets of the mothers of defective children are found to be significantly lacking in adequate amounts of calcium, viosterol, iron and vitamins B, C and D.

Altogether these investigations lead to the conclusion that gross human congenital malformations arise solely from influences which affect the germ cells prior to fertilization. Evidence available did not indicate that they result from factors that operate for the first time after fertilization has taken place. Further, the evidence indicates that the couples who give rise to malformed

offspring are reproducing inefficiently. Efficient mating, in the sense employed, is considered that in which reproduction occurs at will; all offspring are carried to term, are born alive and are normally developed both mentally and physically. Couples with inefficient matings possess, it seems, an excessive probability of having malformed children. With these considerations in mind the physician must decide how to answer questions from parents of a congenitally malformed child. He may tell them, Murphy states, that they have a greater chance of having another malformed child than other couples and that the chance of having another defective child is increased if one or both of the parents are well advanced in years. Further, they may be told that the occurrence of malformation depends on the character of the egg or sperm before fertilization rather than on any influences acting on the already fertilized egg and that malformations are not due to syphilis or any other disease of the parents.

The conclusions reached by this study are well documented and, although requiring confirmation, of course, can serve as the basis for much intelligent professional advice to the unfortunate parents of malformed children.

NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

Again on January 30 the nation will celebrate the birthday of President Franklin Delano Roosevelt with a series of festivities designed to yield additional income for the National Foundation for Infantile Paralysis. This foundation was organized Jan. 3, 1938, as a non-profit membership corporation in the interest of the crippled. The foundation is managed by a board of trustees, and the scientific and educational activities are in charge of physicians and educators of distinction. At present the work of the foundation is concerned with national and local activities. The national body makes grants for research, supporting specific projects in fully accredited institutions after approval by one or more of the medical committees. The projects which are approved receive grants on a budget basis for one year, at the end of which time an accounting is made to the foundation and all unused funds are returned. Forty-four grants have been made, of which eighteen were approved by the Committee on Virus Research, twenty-three by the Committee on Research for the Prevention and Treatment of After-Effects, three for epidemic or educational purposes, and in addition a hospital and educational center has been established at Tuskegee Institute. Moreover, the foundation has supported an exhibit at the New York world's fair, has distributed its publications widely and has aided in the development of splints and frames.

All of the net proceeds from the celebration in 1938, amounting to \$1,010,378.14, were received by the foundation. In 1939, 50 per cent of the net proceeds of the birthday celebration, after the expenses of the national campaign had been deducted, were received by

3. Stewart, M. J.; Willis, R. A., and de Saram, G. S.: Argentaffin Carcinoma (Carcenoid Tumor Arising in Ovarian Teratomas, *J. Path. & Bact.* 49: 207 (July) 1939.

1. Murphy, D. P.: Congenital Malformations, Philadelphia, University of Pennsylvania, 1939.

the foundation. This amount was \$600,000. The remaining 50 per cent was left in the communities throughout the United States for local relief and to this amount was added, through the efforts of the foundation, \$50,000 as a contribution from the Will Rogers Memorial Commission. The balance sheet of the National Foundation for Infantile Paralysis, as of Sept. 30, 1939, shows total assets amounting to \$1,271,027.25. Among the expenses listed for the period from its establishment to the foregoing date have been grants to institutions and others for purposes previously indicated, amounting to \$463,972.67; rent and building services, \$4,196.16; and salaries and wages, \$30,396.41.

The president of the National Foundation for Infantile Paralysis is Mr. Basil O'Connor, a lawyer of New York, formerly a partner of President Roosevelt. In both the financial and the scientific direction of the foundation he has been guided by men of experience. The annual report is a model for its succinctness of expression and for the evidence which it offers of the efficiency and economy with which the funds have been administered.

Current Comment

POLIOMYELITIS VIRUS IN SEWAGE

The repeated isolation of the virus of poliomyelitis from human feces¹ together with the recently reported isolation from urban sewage² seems to challenge generally accepted theories of the epidemiology of this disease. During a recent poliomyelitis epidemic in Charleston, S. C., numerous samples of municipal sewage were collected by Paul and his colleagues² from various sites throughout the city, particular attention being paid to one pumping station. Here the sewage came from parts of the city in which most of the cases of poliomyelitis had occurred. Eight liter samples of this sewage were allowed to stand in a tall glass bottle for twenty-four hours, with ice packed about the base of the bottle most of the time. At the end of two hours and twenty-four hours 200 cc. samples of the resulting sediment were drawn off from each bottle and about 10 per cent ether was added to serve as a bactericidal agent. The etherized sediment was then sent to New Haven, Conn., where doses of from 25 to 125 cc. of each sample were inoculated intraperitoneally into monkeys. Of the six monkeys thus far inoculated, four have died or been killed after developing acute peritonitis or extensive abscesses of the abdominal wall. Evidently 10 per cent ether is not an effective bactericidal agent. Two of the monkeys, however, did not develop a local bacterial infection but came down with typical poliomyelitis after an incubation period of about eight days. Typical cord lesions were demonstrated at necropsy in these monkeys. Successful

transmission of poliomyelitis to a second monkey was accomplished by cord to cord inoculation. The authors conclude that poliomyelitis virus was present in effective concentration in at least two samples of municipal sewage. Whether or not the presence of active virus was a direct or indirect cause of the epidemic was not determined.

PRESIDENT ROOSEVELT RECOMMENDS PURCHASE OF SITE FOR NEW ARMY MEDICAL LIBRARY BUILDING

The acquisition of a site for a new Army Medical Library and Museum building in Washington was recommended by the President in the budget for the fiscal year of 1941, which he submitted to Congress January 4. The budget contemplates that the Congress shall appropriate \$600,000 for the purchase of the site and for preliminary expenses in connection with the building to be constructed and that the site be selected on East Capitol Street, in Washington, adjacent to the Congressional Library group. Thus moved one step further toward fruition the hopes and petitions of physicians that a structure be provided in which the vast collection of invaluable medical literature comprising the Army Medical Library, often spoken of as the Surgeon General's Library, may be safely and adequately housed. The Seventy-Fifth Congress authorized the construction of such a building to cost \$3,750,000 but did not appropriate any money to make effective its authorization. The recommendation contained in the budget for 1941 is now before the Committee on Appropriations of the House of Representatives.

AMERICAN WOMEN ARE GETTING THINNER

For many years the public has been steadily bombarded with propaganda concerning the perils of obesity. Much of it is based on sound statistical evidence of the shorter longevity and greater liability to certain types of disease shown by overweight people. The inevitable result is now evident in the figures of average weights of women insured in the Ordinary Department of the Metropolitan Life Insurance Company.¹ The tabulation of the average weights at various heights according to age in 1922-1923 as compared to those in 1932-1934 showed that in all but a few instances there has been a decline in the average weight for each height at every age. The extent of the declines is not large and is usually from 3 to 5 pounds. It is perhaps surprising, however, that the declines are fairly uniform for the various ages and have been as great for older as for younger women. It would be rash, however, to ascribe the general decline in the average weights of women exclusively to the influence of health education and fashion, since modifications in eating habits represented by a gradual change from the emphasis on quantitative caloric needs to the present consideration of qualitative needs, which stresses the value of so-called protective foods, has also occurred in an apparently quite independent manner.

1. Harmon, P. H.: The Use of Chemicals as Nasal Sprays in the Prophylaxis of Poliomyelitis in Man, *J. A. M. A.* 109:1061 (Sept. 25) 1937. Trask, J. D.; Vignee, A. J., and Paul, J. R.: Poliomyelitis Virus in Human Stools, *J. A. M. A.* 111:6 (July 2) 1938. Kramer, S. D.; Hoskwith, B., and Grossman, L. H.: *J. Exper. Med.* 69:49 (Jan.) 1939.
2. Paul, J. R.; Trask, J. D., and Culotta, C. S.: *Science* 90:258 (Sept. 15) 1939.

1. American Women Getting Thinner, Statistical Bulletin, Metropolitan Life Insurance Company 20, No. 11 (Nov.) 1939.

ORGANIZATION SECTION

MEDICAL EDUCATION IN THE UNITED STATES, 1934-1939

Condensation of a book just published containing a report to the Council on Medical Education and Hospitals on the status of American medical schools

Not only in scientific investigation and discovery, in private practice and public health, but also in the field of education, American medicine has won for itself a place of unquestioned preeminence. The critical study of medical schools initiated by the American Medical Association in 1901 constituted the pioneer educational survey in this country and became, in many respects, a model for those that followed. The achievements of the Council on Medical Education in raising the standards of medical education and practice have served as a stimulus and example to other professions. More recently the Council, in accordance with the request of the Association of American Medical Colleges, undertook another nationwide survey of medical education. All the recognized medical schools in the United States and Canada were visited, and the data gathered have now been compiled and published by the Council in a volume entitled "Medical Education in the United States, 1934-1939."

Without naming individual schools, the report prepared by Weiskotten, Schwitalla, Cutter and Anderson describes in general terms the organization and administration, the faculty and student personnel, and the clinical and financial resources of the medical schools, thus presenting an objective picture of medical education in this country for the years under review.

THE UNIVERSITIES AND THE MEDICAL SCHOOLS

The influence of universities in medical education had developed rapidly in the last thirty years. At the time of the survey, fifty-seven of the sixty-six four year schools of medicine in the United States were, officially at least, parts of universities. There was, however, wide variation in the nature and significance of this relationship. Of the many ways in which it might be analyzed, perhaps the simplest and most illuminating is a financial study. A university which contributes largely to the support of its medical school gives convincing evidence of its consciousness of an obligation to medical education and of its unhesitating acceptance of that responsibility. On the other hand, a university which makes no contribution to the school of medicine or which actually absorbs for general university purposes a part of the income of the medical school may be more of a hindrance than a help to medical education. The pattern of university organization may vitally affect the educational program of the school of medicine. Institutions in which administration is highly centralized not infrequently subordinate the aims and purposes of professional schools to such a degree that the faculty and students of medicine lose consciousness of the elevated dignity and social responsibility of their calling.

Of the fifty-seven universities with medical schools, twenty-four were tax supported and thirty-three voluntarily supported. Of the twenty-four maintained by public funds, twenty-one were state institutions and three were municipal universities. Among the thirty-three private institutions, eight received church support. However, some of the privately controlled universities received governmental aid in the form of public appro-

priations and some of the publicly controlled institutions received gifts and endowments from private sources. State appropriations for universities having medical schools ranged from \$226,000 to \$6,588,000, university expenditures from \$400,000 a year to \$14,500,000. That medicine is by far the most costly of the various types of professional education is shown by table 1.

ORGANIZATION AND ADMINISTRATION OF THE MEDICAL SCHOOL

Of the sixty-six four year schools of medicine in the United States, seven were completely independent organizations without university connection. Patterns of organization and administration reflecting doubtless local situations prior to university affiliation were markedly diverse. Responsibilities of the dean and of the faculty to one another and to the school were variously and sometimes vaguely defined.

The geographical location or separation of the school presents a problem peculiar to medicine. For obvious reasons the medical school, or at least its clinical division, must be located in a large center of population and in close proximity to the hospitals used for teaching. Consequently some medical schools are located apart from the university campus, possibly in the same city but several miles away, in some instances at a distance of from 50 to 200 miles. Again, the medical school itself may be divided, the preclinical sciences being taught in one place and the clinical branches in another. Such scattering of its component parts cannot be in the best interest of the university or promote the unity of medical education.

The influence which the dean may exert on the development of his school was clearly manifested during the survey. Some schools consciously availed themselves of this means of stimulating growth; others complacently accepted the concept of the dean as a mere figurehead. Faculties likewise assumed or accepted varying degrees of responsibility for the school's educational program, according to the fundamental philosophy of the institution. Examples were found of the extremes both of centralization and of decentralization.

THE FACULTIES OF MEDICAL SCHOOLS

In the evaluation of schools of medicine no single factor could be of greater importance than the competence of the faculty, provided such competence could be objectively determined. Direct measures, however, of the teachers' ability are unfortunately wanting. In this study an approximate estimate of competence of teaching personnel on the basis of the time spent in graduate study, the amount and kind of teaching experience, together with membership in scientific societies, attendance on and participation in scientific meetings and the publication in recognized journals of the results of original investigation was obtained. Effective teaching, in medicine at least, requires an intimate teacher-student relationship. As a guide in determining how far the development of such a relationship was possible, the teacher-student ratio was computed for the com-

bined departments of the basic medical sciences. This ratio varied from 1:2 to 1:12, with an average of 1:5. These figures clearly revealed overcrowding in some institutions.

In the long run the salaries offered by a school of medicine will be reflected, with some allowance for environment, in the competence and ability of the

TABLE 1.—*Comparison of Instructional Costs in Various Professional Schools*

School	Cost per Student Credit Hour
Agriculture	\$14.51
Engineering	10.52
Education	4.06
Commerce	5.92
Law	11.05
Dentistry	15.87
Medicine	26.96

faculty. The maximum salary payable to a professor in the basic science departments ranged from \$2,240 to \$16,000, surely an unwarrantable spread. Since it is not easy to assume that the highest salaries were too large, the conclusion is inescapable that the lowest salaries were far too low.

SELECTION OF STUDENTS.

The importance of careful selection of students of medicine cannot be overstated. No other element in medical education is so significant for the future. Schools of medicine are in a fortunate position as compared with other professional schools in that they receive annually applications from more than twice as many candidates as they can accept. Many factors enter into the selective process, but notwithstanding the vast amount of time, thought and effort devoted to it the results are not yet wholly satisfactory. Entrance requirements have been progressively raised, but the mere accumulation of college credits is no guaranty of fitness for the practice of medicine. A qualitative appraisal of the candidate's scholastic record is a better though by no means perfect criterion. Recently there has been developed an aptitude test which some institutions believe yields information of value.

A criticism of medical schools, frequently voiced, is that a student dropped from one institution will not be accepted in any other. If the school in which he originally enrolled has made a conscientious effort to assist him in adjusting himself to the demands made on him there should be no occasion for concern.

THE INTERNSHIP

The internship was not included in the scope of this study. Fifty-two of the sixty-six four year schools conferred the degree of Doctor of Medicine at the end of the four year curriculum, indicating thereby that they regarded the internship as a phase of graduate rather than undergraduate education.

THE CURRICULUM

As a professional institution the medical school considers its curriculum a unified whole. The organization of the faculty into departments, each having its own responsibility, does not imply the independence of the several units to the extent that is usual in college or other divisions of the university and, in some instances at least, it would appear that the objective of medical education is in conflict with efforts to diffuse the services of the departments of the basic medical sciences throughout the whole range of university activities.

THE CLINICAL CLERKSHIP

The culmination, as well as the unique feature, of the medical curriculum is the practical experience of dealing with patients which the student obtains during his clinical clerkship. In the hospital ward and dispensary he is given the opportunity under supervision to take histories and examine patients, to make all necessary laboratory tests, and then, having weighed the evidence, to formulate his own diagnosis and outline the indicated treatment. From day to day he follows the patient's course until the time of his discharge. Not all the schools had developed clerkships that were wholly satisfactory, owing in some cases to the lack of sufficient clinical facilities.

THE LIBRARY

Perhaps no department is more vitally essential to the educational program of a medical school than its library, reflecting as it does the scientific interest of both students and faculty. Since the study and practice of medicine is something more than an art and a philosophy, and since it is dependent on the advances in related fields of scientific endeavor, it is necessary for the modern medical library to include in its resources something of the literature of those sciences on which it so heavily depends. The value of the service of the library is contingent on its accessibility, on the periodicals, monographs and reference works it contains

TABLE 2.—*General Hospital Beds, 1936*

Location of Medical Schools	General Hospital Beds per Student
Little Rock, Ark	4.5
Los Angeles	19.7
San Francisco	24.5
Denver	30.1
New Haven, Conn.	9.1
Washington, D. C.	11.4
Atlanta, Ga.	12.8
Augusta, Ga.	4.8
Chicago	14.4
Indianapolis	9.3
Iowa City	5.8
Kansas City, Kan.	5.1
Louisville, Ky.	10.2
New Orleans	9.8
Baltimore	15.1
Boston	8.2
Ann Arbor, Mich.	6.3
Detroit	36.8
Minneapolis	13.6
St. Louis	10.5
Omaha	6.3
Albany, N. Y.	17.2
Buffalo	20.1
New York	32.0
Rochester, N. Y.	24.5
Syracuse, N. Y.	11.5
Durham, N. C.	6.6
Cincinnati	17.9
Cleveland	37.9
Columbus, Ohio	9.6
Oklahoma City	9.9
Portland, Ore.	16.8
Philadelphia	10.5
Pittsburgh	32.2
Charleston, S. C.	5.1
Memphis, Tenn.	8.3
Nashville, Tenn.	5.6
Dallas, Texas	6.5
Galveston, Texas	5.0
Burlington, Vt.	2.8
Charlottesville, Va.	3.3
Richmond, Va.	6.1
Madison, Wis.	10.3
Milwaukee	14.8
	14.2

and, above all, on the educational background and ability of the librarian and staff to provide something more than technical service, namely an appreciation of the function of the library. The number of periodicals currently received by medical school libraries ranged from twenty-five to 625. The number of foreign language journals was not infrequently an index of the breadth of scientific interest on the part of faculty and

students. In fifty-four schools, library budgets ranged from \$1,500 to \$50,000 annually, with a median of \$7,200. Library expenditure for each student ranged from \$3.41 to \$181.

CLINICAL FACILITIES

Since medicine can be learned only by observing and examining sick people, the school of medicine must have under its control a sufficient amount and variety of clinical material to enable its students to become thoroughly familiar with all the more common manifestations of disease and to be able to recognize at least those which are less common. That it may not always be easy to satisfy this requirement is evident from table 2, which shows the ratio between the number of medical students in third and fourth year classes and the number of general hospital beds in cities where medical schools are located.

FINANCIAL RESOURCES

No evaluation of medical schools would be complete without a study of financial resources and administration. The sixty-six four year schools of medicine had,

TABLE 3.—Income

	Total	From Other than Student Fees	Percentage from Other than Student Fees
Maximum	\$1,650,434	\$1,427,426	90.5
First quartile	407,982	307,325	79.4
Median	222,927	110,283	60.5
Third quartile.....	154,775	51,200	28.8
Minimum	93,954	3,743	3.7
Average	\$ 338,644	\$ 225,954	55.3

Figures on the same line in the several columns do not, except by chance, refer to the same institution. Percentages are not derived from figures in other columns.

at the time of the survey, a combined annual income of \$22,345,483 and a combined expenditure of \$21,491,248. For instructional costs, largely salaries, and supplies incidental to instruction, the sum of \$17,047,865 was spent. The sources from which income was derived were student fees, endowment funds, special gifts and grants, government subsidies, subsidies for services rendered and contributed services. The range of income and the amount derived from sources other than student fees are shown in table 3.

The average income for each student in state and municipal institutions was \$693.91, as compared with \$1,230.78 in medical schools privately controlled. It is generally believed that of all figures obtainable from an analysis of budgets the one that most nearly indicates the relative excellence of the institution is the expenditure for instruction for each student. In the medical schools this figure ranged from \$170 to \$3,609, with a median of \$535 and an average of \$843.

ANATOMY

The development of medicine as a science had its earliest beginnings in the study of anatomy, and no subject is more fundamental. Physical facilities for the teaching of anatomy were, in general, satisfactory so far as the students were concerned, but the provision made for the members of the staff was often inadequate. Expenditure by the department of anatomy varied from \$89 to \$923 for each student, with a median of \$273. The time allotted to the subject in the curriculum varied from 220 to more than 600 hours. Paradoxically, the weaker schools were often those making the heaviest assignments of time. There was clearly manifested a trend toward a dynamic conception of anatomy. There

was evident also a definite need for broadly trained anatomists who have a clear understanding of the objectives of the undergraduate medical course.

BIOCHEMISTRY

While instruction in biochemistry was believed to be, on the whole, more satisfactory than in any other of the preclinical sciences, there were fewer medical graduates among the departmental staff. In fact, in more than half of the sixty-six four year medical schools there were no teachers of biochemistry who held medical degrees. Plant and equipment were rather generally sufficient. The median budget allotment was \$145 for each student. In a number of schools there was no separate department of biochemistry but this subject was combined with physiology or pharmacology. In all but three schools the basic course in biochemistry was given in the first year. Many of the departments of biochemistry carried heavy responsibilities to others than medical students, notably dental students and students from the graduate school. In spite of these obligations, scientific interest and productive research, as evidenced by the number of publications, have been even more manifest in biochemistry than in other preclinical sciences.

PHYSIOLOGY

In physiology the medical student may have his first real contact with biologic experiments and an opportunity to become familiar with those methods of investigating function which later he will apply in his study of patients. The teaching of physiology was handicapped by inadequate facilities or poor equipment in a considerable number of schools. Crowding was more evident than in other departments of the basic medical sciences. Financial support ranged from \$55 to more than \$1,000 per student. The ratio of teachers to medical students ranged from 1:6 to 1:74. The median ratio was 1:18. Teachers of physiology ranked high, judged by the number of them who were members of national scientific societies. The average time devoted to physiology in the medical curriculum was 240 hours and there was evident a tendency to complete the course during the first year.

PHARMACOLOGY

Pharmacology was the Cinderella of the basic medical sciences. Some schools did not recognize it as an independent discipline. More frequently than any other of these sciences it held a subordinate position in a combined department. Where independent, its budget ranged from \$55 to \$447 for each student, the median figure being \$145. Of the 141 teachers of pharmacology with professorial rank, eighty-nine were members of one or more societies related to their field, but there were fifteen schools in which no one of the faculty held such membership. The importance of pharmacology has recently been emphasized by Raymond B. Fosdick, president of the Rockefeller Foundation, yet this science is hampered by lack of adequate support with a consequent shortage of well trained younger men to fill vacant professorial chairs.

BACTERIOLOGY

During half a century, and until very recently, the most striking advances in the field of medicine were made in bacteriology; but these discoveries have had the greatest practical importance through their applications to the prevention and cure of disease. For all that, only nineteen of sixty-six schools had set up independent departments of bacteriology. Combined with

other departments it frequently played a minor role. Because of the number and variety of these combinations, budget allowances were difficult to compute. Many departments had responsibilities to other than students of medicine. Immunology was for the most part included in the program of the department of bacteriology.

PATHOLOGY

The placing of medicine on a scientific foundation was due largely to advances made in the field of pathology. It is highly essential, therefore, that students of medicine acquire an understanding of what is known of the fundamental principles involved in the various types of pathologic reactions in order that they may be prepared to apply these principles in their consideration of the various clinical manifestations of disease. A few departments of pathology were definitely handicapped by lack of space. Financial support ranged from \$78 to \$1,030, with a median figure of \$262. In all but one of the sixty-six schools the director of the department of pathology was a physician. Some departments were heavily burdened with outside responsibilities, especially in connection with other than university hospitals.

MEDICINE

Recognizing that the primary purpose of medical education is to prepare a scientifically trained personnel for the diagnosis, treatment and prevention of disease in man, it should be obvious that the goal of all the student's efforts to secure a mastery of the basic sciences is to enable him to deal intelligently with the problems of clinical medicine. In the department of medicine the student has his first personal and professional contact with sick persons. He encounters an endless variety of personalities influenced by heredity, environment, illness and a host of social and economic factors any or all of which may profoundly influence his medical problem. It is precisely here that the character of the student and his attitude toward life and toward his fellow man assume an importance equal to that of his scientific attainments.

While many of the departments of medicine were functioning without any physical facilities whatever for their exclusive use, the higher ranking departments were provided with their own quarters, consisting of offices and laboratories, both for teaching and for research. Financial support for the department of medicine ranged from \$450 to \$319,000, with a median figure of \$23,000.

In medicine, especially, the clinical clerkship is the essence and the culmination of the educational program. For this, clinical material, adequate in kind and amount, accessible and under academic control, is an absolute necessity. Not too many of the medical schools were fortunately situated in this respect. Those which were more progressive attempted so to arrange the curriculum that each group of students received its initial clinical experience in the department of internal medicine and also made this assignment of longer duration than the time allotted to surgery, pediatrics or obstetrics.

SURGERY

In recent years the position of surgery in the undergraduate curriculum has been seriously questioned. As a recognized specialty there would seem to be no excuse for requiring every student to become proficient in the technic of major operative procedures. On the other hand, an understanding of the various injuries and pathologic states which may be treated surgically, and of the principles involved in such treatment, is undoubt-

edly an essential part of the training of every physician. The teaching of surgical pathology, where it was well done, was often the outstanding contribution of the department of surgery. The treatment of emergencies was a phase of surgical teaching for which, in many instances, inadequate provision was made. Sixty-three departments of surgery had budgets which ranged from \$159 to \$247,500, the median figure being \$11,131.

OBSTETRICS AND GYNECOLOGY

In recent years there has been, apparently, a tendency to combine obstetrics and gynecology in a single department. Certainly no one can be considered fully competent in either of these fields unless he has had instruction and experience in the other. Nevertheless, the requirement of practice in the two fields, and the education, experience and interests of faculty members

TABLE 4.—*Annual Births in Cities in Which There Are Medical Schools, 1936*

Location of Medical Schools	Ratio of Births to Graduates
Little Rock, Ark.	27
Los Angeles	153
San Francisco	72
Denver	110
New Haven, Conn.	69
Washington, D. C.	49
Atlanta, Ga.	106
Augusta, Ga.	35
Chicago	81
Indianapolis	55
Iowa City	17
Kansas City, Kan.	31
Louisville, Ky.	61
New Orleans	56
Baltimore	81
Boston	50
Ann Arbor, Mich.	8
Detroit	375
Minneapolis	62
St. Louis	61
Omaha	29
Albany, N. Y.	98
Buffalo	157
New York City	215
Rochester, N. Y.	117
Syracuse, N. Y.	79
Durham, N. C.	35
Cincinnati	129
Cleveland	251
Columbus, Ohio	54
Oklahoma City	65
Portland, Ore.	80
Philadelphia	56
Pittsburgh	204
Charleston, S. C.	56
Memphis, Tenn.	48
Nashville, Tenn.	40
Dallas, Texas	64
Galveston, Texas	12
Burlington, Vt.	20
Charlottesville, Va.	5
Richmond, Va.	44
Madison, Wis.	32
Milwaukee	155

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are such that a complete combination and integration of these subjects has rarely been found to be practicable. The importance of sound training and adequate experience in the fundamentals of obstetrics is manifest from the fact that more than 25 per cent of recent medical graduates now locate in communities with a population of less than 5,000.

Clinical facilities for the teaching of obstetrics differed somewhat from those required by other clinical departments in that many schools relied largely on a home delivery service to provide practical experience for the students. Under adequate supervision this plan has much to commend it, but nothing can be said in defense of the custom of sending students into patients' homes to manage deliveries with no instructor present. In some schools practical obstetrics is an elective offered to only a fraction of the class. It is sometimes asserted that sufficient clinical material is not available to pro-

vide for each student the opportunity personally to conduct a reasonable number of labors. In table 4 is shown, for each of the cities in which medical schools are located, the number of births annually divided by the number of senior medical students. Obviously not all the births occurring in a community are available for teaching, but the table shows that for most of the schools an adequate amount of obstetric material is at hand if the school is determined to secure proper control. On the other hand, in places where the number of births for each student falls below fifty it may be questioned whether there is any possibility of conducting a satisfactory course in obstetrics without having recourse to the clinical resources of larger cities.

PEDIATRICS

Pediatrics has led all clinical branches in emphasizing the preventive aspects of medicine. Although the number of physicians limiting their practice to pediatrics has greatly increased in recent years, it is still true that the majority of children are cared for by general practitioners and not pediatricians. Medical schools, therefore, are obliged to lay a sound foundation and give adequate preparation for this type of practice.

In respect to clinical facilities, this department has fared unusually well. Financial support ranged from \$464 to more than \$100,000, with a median of \$5,100. The educational program followed, in general, the trend of other clinical departments, especially medicine. Clerkships in hospital and dispensary were the salient features of the instruction.

CLINICAL SPECIALTIES

During the course of the survey no attempt was made to study completely the teaching in the specialties of

medicine for, as a matter of fact, these subjects were receiving less attention in the undergraduate curriculum. No effort is being made to produce of the average medical student a composite specialist. More and more clearly it has been recognized that adequate preparation for special practice requires intensive training at the graduate level; consequently there has been a tendency to shift the teaching of the specialties to the graduate school, to fellowships or to residencies. This trend in some instances, however, has led to such neglect of the specialties in the undergraduate curriculum that some recent graduates find themselves unable to make a complete examination of a patient or to determine for themselves whether or not he should be referred to a specialist. Medical schools might well define clearly their responsibilities in this field.

RECENT DEVELOPMENTS

Following the survey, there was sent to each school a graphic report or pattern map which indicated by comparison with others the rank of each school with respect to nearly a hundred criteria of excellence. Deans and faculties in many schools found these charts of value in calling attention to special needs.

Recent years have been marked by conspicuous advances in the field of medical education. In a considerable number of institutions there have been noted substantial improvements in organization and administration, in student selection and in physical and clinical facilities, with a greater measure of financial support. Since the publication of the Council's first classification of medical schools and the Carnegie report, there has been probably no five year period which has witnessed such activity and progress in the field of medical education.

MEDICAL BILLS IN THE SEVENTY-SIXTH CONGRESS

Prepared by the Bureau of Legal Medicine and Legislation, American Medical Association, December 1939

This survey of federal legislation of interest to the medical profession covers the first regular session of the seventy-sixth Congress, which convened Jan. 3, 1939, and adjourned August 5, and the second (special) session, which convened September 21 and adjourned November 3. During the special session no action was taken on any legislation of particular medical interest, although several bills in that category were introduced. The third session convened Jan. 3, 1940, and its adjournment will mark the end of the seventy-sixth Congress.

The legislation that has already been enacted or defeated and that now pending represents what has been proposed that is of interest to physicians.

I. LAWS ENACTED TO JAN. 3, 1940

Social Security Act Amendments

On Aug. 10, 1939, the President approved the "Social Security Act Amendments of 1939" (Public Law No. 379). This law amends in many important respects the Social Security Act of 1935. The original act devolved on the Social Security Board the duty of recommending methods to provide more effectively the objects sought by the act. An Advisory Council on Social Security was created in May 1937 jointly by the Senate Special Committee on Social Security and the Social Security Board to assist in studying the advisability of amending the act. This council made a final report Dec. 19, 1938. The Social Security Board

submitted recommendations to the President December 30, which were transmitted to the Congress with a special message Jan. 16, 1939. On the basis of the President's message, the board's report and the public hearings which it held, the House Committee on Ways and Means submitted to the House a bill, H. R. 6635, embodying amendments to the Social Security Act. On June 10, the bill passed the House. In the Senate, it was referred to the Senate Committee on Finance. To that committee Senator Wagner, of New York, proposed that the bill be amended so as to authorize the Social Security Board to make provision for furnishing medical, surgical, educational, rehabilitation or other services to an ill defined class of persons unable to work because of remediable disabilities. The committee, however, refused to embody this proposal in the bill. On the floor of the Senate, another proposal by Senator Wagner was made a part of the bill, creating an Advisory Council on Disability Insurance to study and report on the establishment of disability insurance. The Senate passed the bill July 13. Conferees on the part of the Senate and House then met in an effort to compromise the differences in the bill as it passed the House and as it passed the Senate. After Senator Wagner's proposal to create an Advisory Council on Disability Insurance had been eliminated from the bill, the conferees agreed on all other differences, the House and Senate accepted the report of the conferees, and the bill finally became a law.

As already stated, important changes in the Social Security Act were effected by the new legislation. For maternal and child health, an increase of \$2,020,000 is authorized; for services for crippled children, there is an increase of \$1,020,000; for public health, an increase of \$3,000,000 is provided; the exempted employments in the original act were broadened to include services performed as a student nurse in the employ of a hospital or a nurses' training school by an individual who is enrolled and is regularly attending classes in a nurses' training school chartered or approved pursuant to a state law, and services performed in the employ of a hospital by an intern who has completed a four years' course in a medical school chartered or approved pursuant to a state law; the old age insurance tax on employees and employers was frozen at 1 per cent for the years 1940, 1941 and 1942, and the benefits provided by the act were liberalized.

Foods, Drugs and Cosmetics

The provisions of the Federal Food, Drug, and Cosmetic Act, passed by the Seventy-Fifth Congress, relating to dangerous drugs, dangerous cosmetics and new drugs became effective on the approval date of the act, June 25, 1938. Certain other provisions relating to labeling and to the use of coal tar dyes in foods, drugs and cosmetics, were by the act made effective twelve months after the date of enactment. Prior to the expiration of that twelve month period, the President, on June 23, 1939, approved a law (Public Law No. 151) further extending the effective date of these provisions to Jan. 1, 1940, and directing the Secretary of Agriculture to promulgate regulations further postponing to July 1, 1940, certain provisions so far as they related to specified types of labeling and containers. In justification of the enactment of this legislation, the House Committee on Interstate and Foreign Commerce had this to say in its report (House Report No. 429):

These provisions, [referring to the provisions whose effective date was postponed] in greater part, are designed to require informative labeling, in order that the purchasers may more intelligently select foods, drugs, and cosmetics for their needs, and in order to prevent the development of unfair competitive situations arising from labels which tell little or nothing.

These provisions of the new law are sweeping in scope. They necessitate the revision of nearly all existing labels for these commodities.

While great progress has been made by the affected industry in bringing about appropriate label revisions and otherwise changing their practices to meet the new law, there is a substantial proportion of the industries who now find it physically impossible to make the required changes by June 25 or who have on hand valuable stocks of labels acquired in good faith which meet fully the requirements of the old law but which fall short of the requirements of the new one.

The situation which has thus arisen with respect to labeling and coal-tar colors is of such scope and importance that the Committee is of the opinion that the effective date of the requirements of the act responsible for the situation should be postponed until at least January 1, 1940.

Such postponement is proposed by section 1 of the bill. The requirements postponed are those with respect to the use of certified colors; the appearance on the label of the name and address of the manufacturer, packer, or distributor; definitions for standards of identity and standards of quality and fill of container for food with associated labeling requirements; appearance on the label of the name and ingredients of nonstandardized fabricated food; the appearance on the label of certain infor-

mation concerning special dietary food and of artificial flavors, colors, and preservatives in food; labeled statements of quantity of contents of drugs and cosmetics; labeled statements of habit forming properties and active ingredients of drugs; directions for use and warnings against probable misuse of drugs; official compendia labeling and packaging requirement for drugs; and labeled statements of precautions on deteriorating drugs.

On Dec. 2, 1939, the Acting Secretary of Agriculture promulgated regulations postponing the effective date to July 1, 1940, of the provisions of the act with respect to any type of lithographed labeling which was manufactured prior to Feb. 1, 1939, and to any type of containers bearing labeling which, prior to February 1, 1939, were lithographed, etched, stamped, pressed, printed, fused, or blown on or in such containers.¹

Reorganization of Government Activities

On April 3, 1939, the President approved the "Reorganization Act of 1939" (Public Law No. 19), providing for an investigation by the President of all executive agencies of the government to determine what changes are necessary to place the operation of the government on an efficient and economical basis and for the submission to Congress of reorganization plans. This law specifically provides that no reorganization plan prepared by the President shall transfer, consolidate or abolish certain named agencies, such as the Federal Trade Commission, the Veterans' Administration, the Federal Communications Commission, and others. On April 25, the President submitted his First Plan on Government Reorganization (House Document No. 262). In this plan, the President proposed, in part, to set up a new agency to be known as the Federal Security Agency. To this new agency was to be transferred the United States Employment Service, the Office of Education, the United States Public Health Service, the National Youth Administration, the Social Security Board and the Civilian Conservation Corps. The Congress having failed to reject this plan, it became effective on the expiration of sixty calendar days after its date of submission.

Taxation of Incomes of Physicians Employed by Federal, State and Local Governments

The Revenue Act of 1939, approved June 29, 1939 (Public Law No. 155), extends certain excise taxes that otherwise would have expired, extends the three-cent postal rate on nonlocal, first class mail, revises to some extent the taxes imposed on corporations and effects other more or less general changes not of particular interest to the medical profession. Another law, however, approved April 12, 1939 (Public Law No. 32), will subject to federal and state income taxes the salaries of a certain group of physicians who heretofore have been exempt by reason of the source of their income. The Public Salary Tax Act of 1939 subjects physicians who are officers and employees of states, their political subdivisions or any agency or instrumentality of either to the taxes imposed by the federal income tax act, and the salaries of physicians who are officers and employees of the United States Government, any territory or possession or political subdivision thereof, the District of Columbia or any agency or instrumentality of any one or more of the foregoing may be subject to the income taxes imposed by the states in which the physicians are located. The

1. 4 Federal Register 4764, Dec. 5, 1939.

Senate Committee on Finance in Senate Report No. 112 had this to say about this law:

At the present time, Federal employees are subject to Federal income taxes, but are exempt from State income taxes. State and local employees, on the other hand, are subject to State income taxes, but are exempt from Federal income taxes, unless engaged in proprietary functions. Persons in private employment are subject to both Federal and State taxes. . . .

Employees of governments receive all the benefits of government which their fellow citizens do, and consequently they should also bear their fair share of its costs. The elimination of the tax exemption privilege would not menace the operations of governmental units, but its existence does threaten the progressive income tax principle of "from each according to his ability to pay." Moreover, it discriminates among persons having the same actual income and offers to government no measurable compensating advantages. The unfair consequences of tax-exempt salaries when judged by present standards of social justice require that they be promptly abolished by legislation if this can be done under the Constitution.

Medical Care for Personnel of U. S. Coast and Geodetic Survey

Public Law No. 48, approved April 26, 1939, authorizes the Secretary of the Treasury to detail medical officers of the United States Public Health Service for duty on vessels of the United States Coast and Geodetic Survey. The law further provides that under regulations all commissioned officers, ships' officers and members of the crews of the vessels of the United States Coast and Geodetic Survey, including those on shore duty and those on detached duty, whether on active duty or retired, and all dependent members of families of such personnel, shall be entitled to medical, surgical and dental treatment and hospitalization by the United States Public Health Service on a parity with officers and enlisted men of the United States Coast Guard and their dependents.

Medical Care and Other Benefits for Veterans

There was enacted a law (Public Law No. 62) the effect of which is to grant medical and hospital benefits to those men who, prior to the enactment of the Economy Act of 1933, were considered Spanish-American War veterans for the purpose of hospitalization and domiciliary benefits.

Public Law No. 109 authorizes the Veterans' Administration to make payments to nonmilitary employees who donate blood for transfusions for veterans hospitalized in veterans' hospital facilities.

Another law (Public Law No. 198) provides, in part, that in the administration of laws pertaining to veterans, retired officers and enlisted men of the Army, Navy, Marine Corps and Coast Guard, who served honorably during a war period as recognized by the Veterans' Administration, shall be, and are, entitled to hospitalization and domiciliary care in veterans' administration facilities on parity with other war veterans.

Any World War veteran, under the provisions of Public Law No. 196, suffering from paresis, paralysis or blindness or who is helpless or bedridden as the result of any disability, and who was in receipt of compensation therefor on March 19, 1933, may be awarded compensation under the laws and interpretations governing this class of cases prior to the enactment of the Economy Act of 1933, even though the disability may have been occasioned by misconduct or wilful misconduct.

District of Columbia

HEALING ARTS PRACTICE ACT.—The President approved, Aug. 11, 1939, a bill to eliminate from the Healing Arts Practice Act of the District of Columbia the requirement that examinations be held on the second Monday in January and July of each year and provides that such examinations may be held at such times as the Commission on Licensure to Practice the Healing Art may by rule or by special order determine (Public Law No. 399). Two laws were enacted providing, respectively, for the issuance of licenses to practice chiropractic to George M. Corriveau (Private Law no. 143) and to Laura T. Corriveau (Private Law No. 144). Both of these individuals had failed to apply for their licenses within ninety days after the approval date of the Healing Arts Practice Act, as required by that act, and hence were not entitled to licenses without examination.

COMMUNICABLE DISEASES.—A law was passed authorizing the Commissioners of the District of Columbia to promulgate and enforce all such rules and regulations as they may deem necessary to prevent and control the spread of communicable and preventable diseases (Public Law No. 388). It repeals the following acts: (1) an act to prevent the spread of contagious diseases in the District of Columbia, approved March 3, 1897; (2) an act for the prevention of scarlet fever, diphtheria, measles, whooping cough, chicken pox, epidemic cerebrospinal meningitis, and typhoid, approved Feb. 1, 1907; (3) an act to provide for registration of all cases of tuberculosis in the District, for free examination of sputum in suspected cases and for preventing the spread of tuberculosis in the District, approved May 13, 1908, and (4) an act for the prevention of venereal diseases in the District of Columbia, approved Feb. 26, 1925.

HOSPITAL LIENS FOR SERVICES.—Another law provides that every hospital in the District of Columbia which furnishes medical or other services to any person injured by reason of an accident, the injuries not being covered by the Employees' Compensation Act or the Workmen's Compensation Act, shall, if the injured person asserts or maintains a claim against another for damages on account of such injuries, have a lien on that part going or belonging to such person (Public Law No. 161).

INSANITY PROCEEDINGS.—A law, approved Aug. 9, 1939 (Public Law No. 359), provides for insanity proceedings in the District of Columbia. The purpose of this law, as explained by the House Committee on the District of Columbia, is to simplify insanity proceedings in the District and to prevent the continuance of conditions that existed in the Gorgas Memorial Hospital's psychopathic ward due to lack of equipment and facilities for the handling of patients.

GROUP HOSPITALIZATION, INC.—A law was approved Aug. 11, 1939 (Public Law No. 395), providing for the incorporation of certain persons as Group Hospitalization, Inc. It authorizes the corporation (1) to enter into contracts with groups of individuals to provide for hospitalization of such individuals on payment of specified rates or premiums and to issue to such individuals appropriate certificates evidencing such contracts; (2) to enter into contracts with hospitals for the care and treatment of such individuals, in accordance with the terms of such certificates, and (3) to cooperate, consolidate or contract with groups or organizations interested in promoting and safeguarding

the public health. The incorporators are declared to be the first board of trustees of the corporation and their successors are to be appointed, one by the Commissioners of the District of Columbia, one by the Medical Society of the District of Columbia, and one by a group consisting of the president or chairman of the boards of trustees or other designated individual of each hospital with which the corporation shall have contracts for hospitalization.

Miscellaneous Laws Enacted

The Treasury Department Appropriation Act (Public Law No. 65) carries an increased appropriation for making effective the provisions of the National Cancer Institute Act, the appropriation being increased from \$440,000 to \$570,000.

Another law (Public Law No. 179) extends the benefits of the United States Employees' Compensation Act to members of the Officers' Reserve Corps and of the Enlisted Reserve Corps of the Army who are physically injured in line of duty while performing active duty or engaged in authorized training. Disability or death resulting from sickness or disease is compensable if such sickness or disease is proximately caused by service on active duty.

The compensation of members of the National Advisory Health Council not in the regular employment of the government is increased from \$5 to \$25 a day by Public Law No. 364.

Another law provides that there shall be in the United States Public Health Service a commissioned medical officer, detailed by the Surgeon General, to be known as the Assistant to the Surgeon General, and who shall perform such duties as the Surgeon General may prescribe (Public Law No. 345).

The registry of pursers and surgeons as staff officers on vessels of the United States, defined to mean any vessel registered, enrolled or licensed under the laws of the United States, but not including a fishing or whaling vessel or a yacht, is provided for by Public Law No. 251. The law provides that no applicant for registry shall be required to take an examination to qualify therefor but that the Secretary of Commerce shall require satisfactory proof of good character, citizenship and such minimum periods of service as he shall deem necessary to establish the requisite knowledge, skill and experience to qualify applicants. Applicants for registry as surgeons are required to possess a valid license as physician and surgeon under the authority of a state or territory of the United States or the District of Columbia.

Public Law No. 357 provides for the seizure and forfeiture of vessels, vehicles and aircraft used to transport narcotic drugs, firearms and counterfeit coins, obligations, securities and paraphernalia. Another law amends the federal law relating to the advance of funds in connection with the enforcement of acts relating to narcotic drugs so as to permit such advances in connection with the enforcement of the Marihuana Tax Act of 1937 and to permit advances of funds in connection with the customs' laws (Public Law No. 339).

II. BILLS DEFEATED TO JAN. 3, 1940

Medical Care for Personnel of Foreign Service

Among the several bills introduced to provide medical services to officers or employees of the foreign service and their dependents, one (H. R. 3537) passed the House and Senate and in due course reached the President for his approval. This bill provided that any

duly appointed officer regularly serving abroad as a representative or employee of the United States foreign service who incurs illness or injury or who becomes physically disabled as a direct result of such service, not the result of vicious habits, intemperance or misconduct, shall be entitled to medical and surgical treatment and hospitalization by the United States Public Health Service. The bill further provided that any such officer or American employee suffering from illness or disability not the direct result of foreign service and any dependent member of the family of any such officer or American employee suffering from illness or disease when such dependent has resided with the officer or American employee on foreign station, the illness or disability not being the result of vicious habits, intemperance or misconduct, may be furnished medical and dental treatment and hospitalization by the United States Public Health Service at a cost to the officer or employee in accordance with rates established by regulations of the Surgeon General and applicable to pay patients from other branches of the government under similar circumstances. The President, however, returned the bill to the Congress without his approval. In doing so, he said, in part:

This bill opens up a wholly new field of Government medical and dental care for Government servants. Up to the present, with a few minor exceptions, hospitalization and medical and dental care by the Government has been confined to the Army, Navy, and Coast Guard.

I do not believe that the Congress wishes to start the practice of extending such assistance to a large class of civilian representatives and employees. There seems no reason why such facilities should be extended to officers and employees in the Foreign Service within the State Department without including all the other employees within the State Department. If this is done for the State Department it should logically be done for the employees of other departments.

The estimate that it would cost only \$21,000 per annum to extend these facilities to 1,600 officers and employees is absurd. With an average of three dependents for each one of them the total would run to about 6,500 individuals and the cost for this one branch of the Government alone would be excessive.

Incidentally, to establish such a Government policy would, in a short time, involve setting up dispensaries and bed facilities in every place in the country where there are many employees of the Government. (House Doc. No. 431, 76th Congress.)

Exemption from Federal Food, Drug, and Cosmetic Act

The original Federal Food, Drug, and Cosmetic Act exempts from certain labeling requirements drugs dispensed on a written prescription signed by a physician, dentist or veterinarian, provided such drugs are not dispensed in the course of the business of dispensing drugs pursuant to diagnosis by mail. A bill was introduced (H. R. 5379) and favorably reported to the House of Representatives, proposing to include in such exemption coverage any drug dispensed by a physician or physicians "for the treatment of asthma or hay fever if such dispensing is in the course of the conduct of a business of dispensing such drug, which business shall have been conducted solely by physicians for at least twenty-five years immediately prior to June 25, 1939." No drug was mentioned by name, but the bill's phraseology so unmistakably pointed to the Dr. Nathan Tucker's Asthma Specific that one Representative was led to remark that it reminded him of another legislative proposal once made to the effect that "all officers of the Army now in the grade of colonel, who have served thirty years, ten of which were in the Philippines and five in Panama, and the rest in continental United

States, and whose hair is red and who have lost two front teeth, and who have been decorated for gallantry, shall, upon retirement, be promoted to be brigadier generals on the retired list." After being referred to as a "legislative monstrosity which should properly be laughed off the floor of the House," and as "one of the most extraordinary measures I have seen in a not very short membership in Congress," the bill was defeated in the House by a vote of 234 to 118.

III. BILLS PENDING, JAN. 3, 1940

Health Insurance; Disease Prevention

The President, on Jan. 23, 1939, sent a special message to Congress on health security with which he transmitted the Report and Recommendations on National Health, prepared by the Interdepartmental Committee to Coordinate Health and Welfare Activities (House Document No. 120). The details of the special message and report, which are now pending in the House Committee on Ways and Means, were discussed in *THE JOURNAL* Jan. 28, 1939, pages 330 and 333.

THE WAGNER BILL.—S. 1620, introduced by Senator Wagner, of New York, Feb. 28, 1939, is pending in the Senate Committee on Education and Labor. This bill purports to provide for the general welfare by enabling the several states to make more adequate provision for public health, prevention and control of disease, maternal and child health services, construction and maintenance of hospitals and health centers, care of the sick, disability insurance, and training of personnel. The Committee on Education and Labor held extensive hearings on the bill, from April 27 to July 13, 1939, at the conclusion of which a preliminary report was submitted to the Senate (Senate Report No. 1139) expressing approval of the general objectives sought by the bill but postponing any commitments on its details. From time to time there have been published in *THE JOURNAL* statements concerning the detailed provisions of the bill, concerning the hearings held on it, concerning the Preliminary Report of the Committee on Education and Labor and concerning the actions taken by the House of Delegates of the American Medical Association with respect to the proposed national health program.²

THE LODGE BILL.—Senator Lodge, of Massachusetts, on Aug. 4, 1939, introduced S. 2963 to add a new title to the Social Security Act providing for a system of health insurance to assist "qualified individuals to receive medical services when they require such care but are without means." A "qualified individual" is defined as one who has been registered as unemployed for at least fifteen consecutive weeks at a public employment office or other agency approved by the Social Security Board; is not receiving old-age benefits; before attaining the age of 65 has been paid, after Dec. 31, 1936, not less than \$5,000 in total wages from an employment as defined in Section 210 (b) of the Social Security Act, and has filed (1) an application for health insurance benefits, (2) a bill for medical or hospital services rendered to him and (3) the sworn affidavit of the attending medical practitioner or of the medical supervisor of the hospital that such medical or hospital treatment was furnished. It is proposed that every

qualified individual shall be entitled in any year, on approval of his application by the Social Security Board, "to have forwarded to the doctor or hospital furnishing him with medical or hospital services, in part or full payment, for such services a sum equal to all or to any part of the health-insurance benefit to which such individual is entitled for such year," such benefits to be equal to one fifth of 1 per cent of such individual's total wages, except that such benefits shall not be in excess of \$25 for one year and the total of all such benefits shall not be in excess of \$100. The bill further proposes that any doctor participating in any "false statement in connection with an application for benefits shall be reported by the Social Security Board to the state medical authority which issues and revokes licenses to practice medicine." The bill is pending in the Senate Committee on Finance.

THE CAPPER BILL.—Pending in the Senate Committee on Finance is another bill, S. 658, introduced by Senator Capper, of Kansas, Jan. 16, 1939, proposing "to aid in alleviating the loss caused by sickness." This bill proposes an annual federal appropriation of \$200,000,000 to induce the states to develop and maintain adequate systems of health insurance. A federal Health Insurance Board is to be created, it is proposed, to administer the act; state plans must be submitted to this board and receive its approval. A state plan, to be acceptable, must provide for cash benefits to be paid employees for loss due to disability and for medical benefits for employees, their dependent spouses, their dependent children and other members of their family who are dependent on them and who live in the same household. Employees entitled to the medical benefits will be permitted to choose physicians from among a list of those who have agreed to render services under the health insurance plan.

CANCER.—Representative Rogers, of Massachusetts, introduced H. R. 4585, Feb. 28, 1939, proposing to amend the National Cancer Institute Act so as to authorize an additional appropriation of \$2,300,000 for the fiscal year ending June 30, 1940, and for each fiscal year thereafter such sums as may be necessary, to assist the states, counties, cities or other political subdivisions to extend and improve measures through public and private institutions and organizations for the diagnosis, treatment and control of cancer, including the providing of hospital, diagnostic clinics and other facilities for the diagnosis and treatment of persons suffering from cancer or suspected of suffering from this disease. The bill is pending in the House Committee on Interstate and Foreign Commerce.

EPILEPSY.—A bill "To provide for, foster, and aid in coordinating research relating to epilepsy and other allied and nervous disorders" is the title of a bill introduced Feb. 23, 1939, by Senator Shipstead, of Minnesota, S. 1557. It is pending in the Senate Committee on Commerce. This bill proposes to create in the United States Public Health Service a National Epilepsy Institute to conduct researches, investigations, experiments and studies relating to the cause, diagnosis and treatment of epilepsy; to assist and foster similar research activities by other agencies, public and private, and to promote the coordination of all such researches and activities and the useful application of their results, with a view to the development and prompt widespread use of the most effective methods of prevention, diagnosis and treatment of epilepsy. This bill is modeled closely after the National Cancer Institute Act.

2. *THE JOURNAL*, April 23, 1938, p. 1372; Aug. 6, 1938, p. 540; Aug. 13, 1938, p. 631; Sept. 3, 1938, p. 936; Sept. 24, 1938, pp. 1188 and 1191; Oct. 22, 1938, p. 1570; Nov. 5, 1938, p. 1775; Jan. 28, 1939, p. 333; Feb. 4, 1939, p. 437; May 13, 1939, pp. 1969 and 1972; June 24, 1939, p. 2607; July 22, 1939, p. 337; Aug. 5, 1939, p. 512; Aug. 12, 1939, p. 597; Nov. 25, 1939, p. 1966.

TUBERCULOSIS.—Two bills were introduced by Senator Murray, of Montana, S. 471, pending in the Senate Committee on Commerce, and S. 2547, pending in the Senate Committee on Finance, proposing to aid the several states with respect to investigation, treatment and control of tuberculosis. The former bill proposes to authorize an initial appropriation of \$5,000,000 and for each fiscal year for four consecutive years a sum "sufficient to carry out the purposes of this Act" to enable each state to make adequate provisions for hospital beds for tuberculous patients. The bill contemplates that the money to be appropriated shall be allotted by the United States Public Health Service to the states that submit approved plans. The latter bill proposes federal subsidies to assist states, counties, cities, health districts and other political subdivisions of the states to establish, extend and improve measures for the prevention, treatment and control of tuberculosis, including the provision of facilities for sanatoriums and other care for persons with tuberculosis. The United States Public Health Service will be authorized to make studies, investigations and demonstrations to develop more effective measures of prevention, treatment and control of the disease. For the fiscal year ending June 30, 1940, the bill proposes to authorize not exceeding the sum of \$7,750,000, for the fiscal year ending June 30, 1941, not exceeding the sum of \$33,500,000, for the fiscal year ending June 30, 1942, not exceeding the sum of \$37,000,000, and for each fiscal year thereafter, such sum as may be necessary, provided that subsequent to the fiscal year 1945 the federal appropriations authorized shall not exceed \$17,500,000.

PNEUMOCONIOSIS.—Pending in the Senate Committee on Education and Labor is a bill, S. 2256, introduced April 27, 1939, by Senator Murray, of Montana, proposing to promote, through the Department of Labor, the general welfare by enabling the several states to make more adequate provisions for compensation for the disability or death of workers from silicosis or other dust diseases. The bill proposes for each fiscal year a federal appropriation sufficient to carry out the purposes of the act, such sum to be allotted to the states which have submitted and had approved by the Secretary of Labor state compensation plans and prevention plans. Another bill, S. 2420, is pending in the Senate with a favorable report from the Senate Committee on Mines and Mining. It was introduced, May 16, 1939, by Senator Neely, of West Virginia, and proposes to authorize the Secretary of the Interior to cause to be made annual inspections and investigations in coal mines for the purpose of obtaining information relating to health and safety conditions, accidents and occupational diseases therein. H. R. 6352, introduced by Representative Keller, of Illinois, is a companion bill pending in the House Committee on Mines and Mining.

MEDICAL CARE FOR NONRESIDENTS.—Representative Voorhis, of California, has introduced two bills, H. R. 2974 and H. R. 2975, both pending in the House Committee on Ways and Means, proposing to amend the Social Security Act to provide aid to states in furnishing medical care to nonresident needy persons. The first bill proposes to authorize an appropriation of \$7,000,000 annually to assist states, counties, health districts and other political subdivisions of states to provide medical care to nonresident needy persons on the same basis as to resident needy persons. The second bill proposes to authorize an initial appropriation of

\$10,000,000 and thereafter for each fiscal year a sum sufficient to carry out the purposes of the bill, to enable each state to furnish financial assistance, or other assistance, including, but not limited to, medical, dental and mental aid, to needy transients.

AID FOR THE BLIND.—S. 2215, introduced by Senator Davis, H. R. 5134 and H. R. 5272, introduced by Representative Dunn, and H. R. 5980, introduced by Representative Van Zandt, all of Pennsylvania, propose, in effect, to permit each state to place its own interpretation on the term "needy individuals who are blind" as used in the Social Security Act. The Senate bill is pending in the Senate Committee on Finance and the House bills in the House Committee on Ways and Means.

Pending also in the House Committee on Ways and Means is another bill, H. R. 5841, introduced by Representative Patrick, of Alabama, proposing to amend the Social Security Act by adding a new title thereto under which an appropriation of \$1,000,000 will be authorized for the fiscal year ending July 1, 1940, and thereafter such sum as may be necessary to enable the states to aid in restoring sight to the blind by furnishing hospitalization and medical and surgical aid.

H. R. 5870, a bill introduced by Representative Angell, of Oregon, proposes to authorize such federal appropriations as may be necessary to enable the Social Security Board to pay an annuity at a rate not to exceed \$50 a month to blind persons whose annual income from sources other than annuities payable under the act is less than \$1,200. The term "blind person" is defined to mean a person who is 21 years of age or over and a citizen of the United States with not more than "20/20 [20/200?] of visual acuity" in the better eye with maximum correction or whose field of vision is limited to twenty degrees or less from the fixation point in all quadrants.

Two other bills, S. 2214, introduced by Senator Davis, and H. R. 5979, introduced by Representative Van Zandt, both of Pennsylvania, and pending, respectively, in the Senate Committee on Finance and in the House Committee on Ways and Means, propose to amend Title X of the Social Security Act providing for financial assistance to certain blind persons by adding a provision that the Social Security Board shall not disapprove any plan because it provides for financial assistance to blind persons having an annual cash income of not more than \$1,200.

Pending in the Senate Committee on Education and Labor is S. 2802, introduced by Senator Sheppard, of Texas, proposing to amend an act authorizing the operation of stands in federal buildings by blind persons. Under the present law a blind person is defined to mean a person having not more than 10 per cent of visual acuity in the better eye with correction, the visual acuity to be certified by a duly licensed ophthalmologist. The pending bill proposes to define a blind person as a person having not more than 20/200 of visual acuity in the better eye with maximum correction or a person whose field of vision is limited to twenty degrees or less from the fixation point in all quadrants but eliminates the requirement that the blindness must be certified to by a duly licensed ophthalmologist.

AID TO PHYSICALLY DISABLED PERSONS.—Numerous bills are pending proposing to amend the Social Security Act so as to provide for the payment of benefits to persons who are physically handicapped to

such an extent that they are unable to engage in a gainful occupation. S. 1218, introduced by Senator Sheppard, Texas, is pending in the Senate Committee on Finance. S. 1265 and S. 2203, introduced by Senator Byrnes, South Carolina, are pending on the Senate Calendar with a favorable committee report. The following House bills are pending in the House Committee on Ways and Means: H. R. 42, introduced by Representative Fitzpatrick, of New York; H. R. 172, introduced by Representative Knutson, of Minnesota; H. R. 1960, introduced by Representative Izac, California; H. R. 2000, introduced by Representative Thomas, Texas; H. R. 2753, introduced by Representative Voorhis, California; H. R. 3999, introduced by Representative Wheelchel, Georgia; H. R. 4035, introduced by Representative Beckworth, Texas; H. R. 5038, introduced by Representative Terry, Arkansas; H. R. 6394, introduced by Representative Angell, Oregon, and H. R. 6997, introduced by Representative Poague, Texas.

Another bill, H. R. 5736, introduced by Representative Voorhis, California, and pending in the House Committee on Ways and Means, proposes to amend the Social Security Act so as to enable the states to furnish financial assistance to needy persons who are not otherwise eligible under that act and for whom employment on public work projects financed in whole or in part by the federal government is not suitable or available.

Pending in the House Committee on Education are three bills, H. R. 1813, introduced by Representative Boland, Pennsylvania, and H. R. 6393 and H. R. 6554, introduced by Representative Angell, of Oregon, providing for the education of all children who are crippled, blind, partially seeing, deaf, hard of hearing, defective in speech, cardiopathic, tuberculous or otherwise physically handicapped and who for their education require an expenditure of money in excess of the cost of educating physically normal children. A similar bill, S. 795, introduced by Senator Pepper, Florida, is pending on the Senate Calendar with a favorable committee report.

United States Department of Health

Representative Pfeifer, New York, has introduced a bill, H. R. 4791, proposing to establish a federal Department of Health to be headed by a Secretary of Health appointed by the President from the medical profession, by and with the consent of the Senate. The bill provides that the Department of Health shall promote and maintain health and sanitation and for such purposes it will be authorized (1) to conduct research, experiments and surveys, formulate and foster plans and compile and disseminate information; (2) to perform such other functions relating thereto as shall be authorized by law, and (3) to cooperate with official agencies established by law in the several states and subdivisions thereof. There are to be transferred to the Department of Health, it is proposed, (a) the Food and Drug Administration; (b) the U. S. Bureau of Census, Division of Vital Statistics; (c) Freedman's Hospital and St. Elizabeth's Hospital; (d) the Children's Bureau, and (e) all functions of the Public Health Service, the Bureau of Narcotics and the District of Columbia Health Department. The bill is pending in the House Committee on Expenditures in the Executive Department.

Representative May, of Kentucky, proposes similarly that a Department of Public Health be created as an

independent agency under the executive branch of the government by H. J. Res. 316, pending in the House Committee on Interstate and Foreign Commerce.

Veterans' Legislation

Except where otherwise indicated, all Senate bills proposing additional benefits for veterans or proposing to enlarge the class of beneficiaries are pending in the Senate Committee on Finance, the House bills in the House Committee on World War Veterans' Legislation.

SPANISH AMERICAN WAR VETERANS.—A bill, H. R. 2540, introduced by Representative Smith, of Washington, and pending in the House Committee on Pensions, provides that, for pension purposes, any person who served under contract with the War Department as acting assistant or contract surgeon during the Spanish American War shall be considered to have been in the active military service of the United States for the period of such contract service. Another bill, S. 259, introduced by Senator McNary, of Oregon, and pending in the Senate Committee on Pensions, proposes pensions for persons who served ninety days in foreign service under the jurisdiction of the Quartermaster General, Surgeon General, of the United States Army, the Secretary of the Navy, or Marine Corps during the Spanish American War.

Three pending bills propose pensions for male nurses who served under contract during the Spanish American War, S. 85, introduced by Senator White, of Maine, S. 1428, introduced by Senator Andrews, of Florida, and H. R. 5978, introduced by Representative Sheppard, of California. The Senate bills are pending in the Senate Committee on Pensions and the House bill in the House Committee on Pensions.

Pending in the House Committee on Pensions are three other bills proposing to extend the benefits accorded veterans of the Spanish American War (1) to contract veterinarians (H. R. 1834, introduced by Representative Colmer, Mississippi), (2) to certain persons who served in the Quartermaster Corps or under the jurisdiction of the Quartermaster General during the Spanish American War (H. R. 1008, introduced by Representative Welch, California), and (3) to any female trained nurse who served in Red Cross Auxiliary No. 3 in the Philippine Islands during the Spanish American War (H. R. 4530, introduced by Representative Buckley, New York).

A bill introduced by Senator Reynolds, North Carolina, S. 2107, and pending in the Senate Committee on Pensions, proposes to authorize a pension of \$50 a month to all persons who served seventy days or more in the military or naval service of the United States during the Spanish American War who have reached the age of 65 years, including any woman who served honorably as a nurse, chief nurse or superintendent of the Nurse Corps under contract.

ADDITIONAL BENEFITS.—A bill, H. R. 2292, introduced by Representative Rankin, Mississippi, proposes to direct the Administrator of Veterans' Affairs to furnish outpatient pneumothorax therapy, insulin and liver extract to veterans requiring such treatment or medication, notwithstanding that the disease necessitating the treatment may not be directly or presumptively service-connected.

Another bill, H. R. 128, introduced by Representative Arends, Illinois, proposes to establish service origin presumptions for veterans of the World War suffering

from spastic paralysis, chronic arthritis, chronic rheumatism or chronic heart disease not the result of the veterans' own misconduct.

The supplying of prosthetic appliances for veterans suffering from nonservice-connected disabilities is proposed by H. R. 4639, introduced by Representative Rogers, of Massachusetts.

Representative Schafer, of Wisconsin, proposes in H. R. 6319, to authorize outpatient treatment for nonservice-connected disabilities of a World War veteran if such veteran has a 50 per cent disability or more directly incurred in or aggravated by service in the World War.

H. R. 2646, introduced by Representative Jarman, Alabama, provides that any veteran shown to have active pulmonary tuberculosis of a compensable degree shall be deemed to be totally disabled for purposes of compensation when hospitalized. Another bill, H. R. 6249, introduced by Representative Reece, Tennessee, provides that any ex-service man shown to have had tuberculosis of a compensable degree shall, under certain conditions, receive not less than \$100 a month for the remainder of his life.

Three bills are pending providing for the furnishing of medical or hospital care for veterans residing outside the continental limits of the United States, H. R. 2650, introduced by Representative Rogers, Massachusetts, and H. R. 2988 and H. R. 6586, introduced by Representative Schwert, of New York.

H. R. 802, introduced by Representative Jenkins, Ohio, provides that where an honorably discharged veteran suffers or has suffered an injury or contracted a disease and an emergency develops requiring immediate hospitalization on account of such injury or disease, and no veterans' facility is feasibly available and delay would be hazardous, the Administrator of Veterans' Affairs shall be authorized to pay the reasonable value of such service received from persons other than the Veterans' Administration.

Representative Voorhis, of California, has introduced a bill (H. R. 6450) providing that wherever a veteran seeking a service connection for a disability is shown to have been engaged in combat with the enemy or to have been subjected to other conditions within the zone of advance which can, in good medical judgment, be considered as causing or aggravating the disability, it shall be considered to have been caused or aggravated by military service.

Also pending are three bills proposing, in effect, to reenact all laws conferring benefits on veterans that were repealed by the Economy Act of March 20, 1933, H. R. 31, introduced by Representative Cannon, Missouri, H. R. 1985, introduced by Representative Robson, Kentucky, and H. R. 2986, introduced by Representative Johnson, Indiana.

Representative May, of Kentucky, has introduced a bill (H. R. 2425) providing that in no event shall any person by reason of wilful misconduct be denied any of the service-connected benefits of the veterans' laws provided such misconduct did not interfere during service with full performance of military or naval duty.

NEW BENEFICIARIES.—S. 2543, introduced by Senator Neely, of West Virginia, proposes to accord all the benefits now given to veterans of the World War to persons who served as members of boards to carry out the provisions of the Selective Draft Act. The bill is pending in the Senate Committee on Military Affairs.

Pending in the House Committee on Military Affairs is H. R. 4634, introduced by Representative Carter, California, providing that citizens of the United States who during the World War enlisted as and served in the status of civilian employees of the Signal Corps of the United States Army, American Expeditionary Forces, shall be considered as having served in the military service of the United States.

Honorably discharged veterans of the Moro and Pulajane wars or campaigns, or other campaigns which took place in the Philippine Islands between the dates of July 5, 1902, and Aug. 5, 1913, inclusive, are to be accorded the same privileges of hospitalization and medical care and treatment accorded to honorably discharged veterans of other wars, if H. R. 6800, introduced by Representative Zimmerman, of Missouri, is enacted. The bill is pending in the House Committee on Pensions.

Senator Reynolds, of North Carolina, proposes in S. 2304, pending in the Senate Committee on Military Affairs, that all hospital facilities under the control and jurisdiction of the Veterans' Administration shall be available for any insane person who has served in the Regular Army, Navy or Marine Corps of the United States for ninety days or more, not dishonorably discharged, irrespective of the cause of such insanity.

Veterans who served on the Mexican Border as members of the Regular Army or National Guardsmen between June 1916 and April 1917, and who received honorable discharges, will, under the provisions of H. R. 5026, introduced by Representative Reece, Tennessee, be given the benefits of all acts conferring compensation and hospital benefits on veterans of the World War.

Representative Buckler, Minnesota, in a bill he introduced, by request, H. R. 3115, proposes to confer the status of veterans of the World War on persons enlisted and serving on United States Shipping Board vessels in war zones during the World War. The bill is pending in the House Committee on Naval Affairs.

Three bills are pending providing that any person who served in the military or naval forces of the United States during a recognized campaign or expedition, and who was honorably separated from such service, shall be granted hospitalization and domiciliary care by the Veterans' Administration subject to the same restrictions and limitations as are now applicable to World War Veterans, H. R. 2725, introduced, by request, by Representative Rankin, of Mississippi, H. R. 5657, introduced by Representative Sheppard, of California, and H. R. 2877, introduced by Representative Van Zandt, of Pennsylvania.

NEW HOSPITAL FACILITIES.—In addition to the proposals embodied in H. R. 7243, discussed later on in this survey under the division "Miscellaneous Bills," twenty-seven bills are pending proposing to construct new hospitals for veterans or to enlarge existing facilities. The types of hospital accommodations proposed and the location thereof, the number of new beds contemplated and the amounts of federal money to be appropriated by these bills are set forth in the accompanying table.

Pollution of Navigable Waters

Sixteen bills were introduced to provide federal aid in the control of water pollution. One of these bills, S. 685, introduced by Senator Barkley, of Kentucky, passed the Senate May 1, 1939, and was subsequently reported to the House of Representatives by the House

Committee on Rivers and Harbors, with the recommendation that it pass. In view of the status of this bill, it is assumed that action on any of the other fifteen bills is improbable. S. 685 proposes to create in the United States Public Health Service a Division of Water Pollution Control. As explained by the Senate Committee on Commerce in its report on the bill, the general tenor of the legislation is to the effect that the division so created shall encourage cooperative activities by the several states for the prevention and abatement of water pollution and to bring about the enactment of uniform state laws relating to water pollution. Provision is made for compacts between the

that waste and sewage in the tributaries to them necessarily fall within the Federal control. The legislation is founded upon the conviction that the time has come in the growth of the country as a whole, and especially in view of the concentration of population in cities and towns, when active steps must be taken to preserve and provide abundant pure water for drinking purposes and other purposes, and also in the interests of the health of the people living along the streams, and further in the interest of propagation of fish, not for the sake of sportsmen so much as a means of food supply. Manifestly, the purpose of the legislation is to provide a reasonable and limited amount of federal aid to induce States, cities, and towns, and also persons, to provide suitable sewage- and waste-disposal plants rather than to divert such sewage and waste into the streams from which a large portion of the population obtains its drinking water and which

Proposed Hospitals for Veterans

Bill No.	Sponsor	Place of Hospital	Beds	Type	Appropriation
H. R. 98	Dowell, Iowa.....	Des Moines, Iowa	300	General (addition)	\$400,000
H. R. 77	Maas, Minnesota.....	Fort Snelling, Minn.	350	General (addition)	425,000
H. R. 120	Arends, Illinois.....	Dwight, Ill.	175	General (addition)	787,500
H. R. 204	Bradley, Pennsylvania.....	Philadelphia area	800	General (new)	2,500,000
H. R. 880	Rogers, Massachusetts.....	At or near Boston	*	General (new)	1,400,000
H. R. 891	Murdock, Arizona.....	Tucson, Ariz.	200	General (addition)	500,000
H. R. 1800	Maloney, Louisiana.....	New Orleans or adjacent thereto	300	General (new)	1,200,000
H. R. 1945	Allen, Louisiana.....	Alexandria, La.	300	General and neuropsychiatric (addition)	450,000
H. R. 2003	Van Zandt, Pennsylvania...	In area of Blair, Centre and Clearfield counties, Pa.	800	General (new)	2,500,000
S. 622	Lodge, Massachusetts.....	At or near Boston	*	General (new)	1,400,000
H. R. 2746	Pace, Georgia.....	Southwest section of Georgia	800	General (new)	2,500,000
H. R. 2079	Van Zandt, Pennsylvania...	Central Pennsylvania area	800	General (new)	2,500,000
H. R. 3137	Spence, Kentucky.....	Lexington, Ky.	146	General (addition)	350,000
H. R. 5330	Maas, Minnesota.....	Fort Snelling, Minn.	700	General (addition)	650,000
H. R. 3533	Sheppard, California.....	Mojave Desert, San Bernardino or Riverside Co., Calif.	200	"Primarily for treatment of diseases of the chest" (new)	500,000
H. R. 3602	Youngdahl, Minnesota.....	Fort Snelling, Minn.	700	General (addition)	650,000
H. R. 3644	Bradley, Michigan.....	In or near Gladstone, Mich.	150	General (new)	700,000
H. R. 3941	Havener, California.....	Fort Miley, Calif.	134	General (addition)	600,000
H. R. 4091	Risk, Rhode Island.....	Rhode Island	400	Neuropsychiatric (new)	1,000,000
H. R. 4188	McCormack, Massachusetts.	In or near Boston	300	General (new)	2,000,000
H. R. 4401	Tenerowicz, Michigan.....	Dearborn, Mich.	250	General (addition)	250,000
H. R. 5284	Merritt, New York.....	Whitehall, N. Y.	600	General (new)	1,875,000
S. 2257	Gurney, South Dakota.....	First Congressional District of South Dakota	*	General (new)	1,000,000
H. R. 6011	Hendricks, Florida.....	On or near the central east coast of Florida	500	General (new)	1,750,000
H. R. 6377	Mundt, South Dakota.....	First Congressional District of South Dakota	*	General (new)	1,000,000
H. R. 7165	Lea, California.....	Northwestern California	300	General (new)	1,500,000
H. R. 7550	Mundt, South Dakota.....	First Congressional District of South Dakota	*	General (new)	1,000,000

* Not stated.

several states in the interest of abating water pollution. Any state, municipality, or other public body which is discharging untreated or inadequately treated sewage or waste into navigable waters or their tributaries is declared under the provisions of the bill to be eligible for federal aid in the form of grants-in-aid or loans for construction of necessary treatment works, in accordance with plans approved by the respective state health authorities and the Surgeon General. A board of five commissioned engineer officers of the Public Health Service is proposed to be established in the division to serve without additional compensation. This board is to submit to the Surgeon General recommendations as to the desirability of commencing, continuing or extending all projects for treatment works on which reports are desired and for which applications have been made for grants-in-aid and loans. The report of the Senate Committee continues:

The theory of the legislation is that our navigable waters are primarily under the jurisdiction of the Federal Government and

under suitable conditions might be made a source of better health and also the means of producing a more abundant food supply. (S. Report No. 120.)

U. S. Medical College

Representative May, of Kentucky, proposes, in H. R. 2423 and in H. J. Res. 316, both pending in the House Committee on Interstate and Foreign Commerce, to establish a United States postgraduate medical and surgical college and research institute to provide properly trained medical, surgical and health personnel for the military, naval and public health services and to coordinate and improve health research activities of the federal government. The college, it is proposed, will be located in the District of Columbia and graduates of accredited medical and surgical colleges may be admitted to the institution for training for army, navy or public health work on designation by Senators and Representatives in Congress. The institution is to be authorized to provide medical, surgical and clinical facilities for the diagnosis and treatment of all types

of illness and physical and mental disabilities. Such facilities are to be available to all patients of any age, but no patient may be admitted whose income is in excess of \$1,000 a year except in police cases and in cases of emergency arising from accidents. All medical, surgical and public health research activities conducted by or under the jurisdiction of the federal government with respect to foods, drugs, alcoholic liquors, maternal and child welfare and medicine and surgery are to be under the jurisdiction of the board of regents of the institution.

District of Columbia

Except as otherwise indicated, all Senate and House bills relating to the District of Columbia are pending respectively in the Senate and House Committees on the District of Columbia.

Representative Lemke, of North Dakota, proposes by H. R. 73 to prohibit the making of any form of vaccination or inoculation a condition precedent to admission to any public or private school or college, or the exercise and enjoyment of any right or privilege, in the District of Columbia.

Two bills provide for the reorganization of the local government in the District of Columbia: S. 2776, introduced by Senator King, Utah, and H. R. 7095, introduced by Representative Kennedy, Maryland. Among other things, these bills propose to transfer to a Department of Personnel the functions now exercised by the Commission on Licensure to Practice the Healing Art and by such examining boards as exist by appointment of that commission, including the Board of Examiners in the Basic Sciences and the Board of Examiners in Medicine and Osteopathy.

Two bills are pending proposing to amend the code of the District of Columbia to provide for the organization and regulation of cooperative associations: H. R. 4312, introduced by Representative Hull, of Wisconsin, and S. 2013, introduced by Senator Capper, of Kansas. The purpose of these bills is apparently to legalize the corporate practice of medicine in the District. They provide, in part, "In the case of an association formed hereunder which arranges the rendering to its members, of licensed professional services on a non-profit basis, said association shall not be subject to the insurance laws, shall not be construed as being in violation of any rule against corporate practice of professions, or in violation of statutes regulating licensure of professions."

Two other bills, S. 2066, introduced by Senator Reynolds, North Carolina, and H. R. 3808, introduced by Representative Reece, Tennessee, propose to provide for the use of scientific tests to determine the degree of intoxication of operators of motor vehicles in the District of Columbia whose vehicle causes personal injury or substantial damage to any other vehicle or property.

The Commission on Licensure to Practice the Healing Art in the District of Columbia would be authorized to issue a license to practice naturopathy to Edward F. Grillo, by the provisions of H. R. 4569, introduced by Representative Shanley, Connecticut. Another bill, H. R. 7024, introduced by Representative Martin J. Kennedy, New York, proposes to authorize the Commission to issue a license to practice the healing art in the District of Columbia to Dr. Marcel P. Kahn.

The enactment of a new podiatry act for the District of Columbia is contemplated by H. R. 6194, introduced

by Representative Bates, of Kentucky. Under the terms of the bill any person is to be regarded as practicing podiatry "who is a manager, proprietor, operator or conductor of a place for performing podiatry operations, podiatric surgery, or who, gratuitously or for salary, fee, money, or other compensation paid either to himself or to any other person, directly or indirectly, furnishes or advertises to furnish, podiatry service, or performs or causes to be performed by any other person, agent, or employee podiatric operations of any kind, diagnosis or professes to diagnose, prescribe treatment or treats or professes to treat disease, pain, deformity, deficiency, injury, or physical condition of human feet or adjacent structures."

Two bills were introduced proposing to regulate the practice of optometry in the District of Columbia: H. R. 278, introduced by Representative Smith, of Virginia, and H. R. 5238, introduced by Representative Nichols, of Oklahoma. The latter bill has been reported to the House of Representatives, with the recommendation that it pass. The reported bill proposes to define optometry "as the measurement and correction of refractive and muscular errors of the eye by any method not including the use of drugs and not including surgical procedures such as cutting or actual manipulation of the eyeball, but including the use of optical appliances for diagnosis or correction of such refractive and muscular errors."

H. R. 5221, introduced by Representative Bolles, of Wisconsin, provides that retired members of the police and fire departments of the District of Columbia shall receive such medical or surgical services, medicines and hospitalization for illnesses or disabilities reasonably calculated to be the outgrowth of injuries received or diseases contracted in line of previous active duty.

Miscellaneous Bills

H. J. Res. 316, introduced by Representative May, and pending in the House Committee on Interstate and Foreign Commerce, in addition to proposing the establishment of a U. S. medical and surgical college and a national department of health as previously referred to in this survey, also contains a provision proposing to make it unlawful for any person to use any seal, stamp or certificate of another person denoting or implying superiority in purity, quality, usefulness or effectiveness of any drug, food, cosmetic, therapeutic lotion, therapeutic device or diagnostic and surgical assists unless authorized by rules and regulations to be promulgated by the United States Public Health Service.

Pending in the House Committee on Interstate and Foreign Commerce is another House joint resolution, H. J. Res. 103, introduced by Representative Coffey, of Washington, providing for a survey by the United States Public Health Service of the conditions in the United States with respect to the importation, production, distribution and use of narcotics. The resolution contemplates that the Surgeon General of the Public Health Service shall make a report to Congress and recommend legislation.

Representative O'Day, of New York, proposes in H. R. 101, pending in the House Committee on Ways and Means, to amend the Social Security Act so as to include under its unemployment and old age provisions employees in nonprofit organizations.

Four bills are pending to permit federal income taxpayers to deduct in connection with their income tax certain amounts paid during the taxable year for dental

surgical or nursing treatment or hospitalization. S. 2093 and S. 2140, introduced by Senator Bone, Washington, are pending in the Senate Committee on Finance and H. R. 4747 and H. R. 4779, introduced by Representative Tenerowicz, of Michigan, are pending in the House Committee on Ways and Means.

Five bills are pending proposing recognition for services performed in the interest of public health. H. R. 2223, introduced by Representative Connery, Massachusetts, proposes to recognize the high public service rendered by soldiers who volunteered and served in trench fever experiments in the American Expeditionary Forces. The bill is pending in the House Committee on Military Affairs. Another bill, also pending in the same committee, H. R. 5874, introduced by Representative McKeough, Illinois, proposes to include the name of Gustaf E. Lambert among those honored by an act recognizing the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever. S. J. Res. 107, introduced by Senator Sheppard, Texas, and which has passed the Senate and is pending in the House Committee on Military Affairs, proposes to authorize the President to award a gold medal to Dr. Anita Newcomb McGee "in recognition of her splendid service to the United States in organizing a corps of trained nurses for the United States Army during the period of the Spanish American War and the Philippine Insurrection." Another bill that has passed the Senate and has been reported to the House with recommendation that it pass is S. 1582, introduced, by request, by Senator Bulow, South Dakota, proposing to authorize the President to bestow a meritorious service medal on any civil officer or employee of the United States, including commissioned officers of the United States Public Health Service and of the Coast and Geodetic Survey, for the performance of an outstanding act of service involving great physical bravery or heroism, or for the performance of a service to the government or to humanity characterized by exceptional merit and involving a high degree of labor or effort above and beyond ordinary and usual requirements of his office. Pending in the House Committee on Patents is H. J. Res. 162, introduced by Representative Sirovich, of New York, proposing to establish an annual award in each of the fields of literature, music, art, drama, journalism, medicine, chemistry, physics and mathematics to be known as "Distinguished Service Medal in Arts and Sciences."

Two bills are pending proposing to authorize the President to appoint for temporary service in the Navy 100 acting assistant surgeons, who shall have the rank and compensation of assistant surgeons. The Senate bill, S. 2284, has passed the Senate and is pending in the House Committee on Naval Affairs along with a House bill, H. R. 5884, introduced by Representative Vinson, of Georgia.

Representative Bloom, of New York, proposes by H. R. 4421 and H. R. 4422 to establish a chiropody corps, respectively, in the medical departments of the Navy and Army. The first bill is pending in the House Committee on Naval Affairs and the second in the House Committee on Military Affairs. Another bill pending in the House Committee on Military Affairs is H. R. 4934, introduced by Representative May, of Kentucky, by request, proposing to authorize the

appointment of female dietitians and female physical therapy and female occupational therapy aides in the Medical Department of the Army; a companion bill is pending in the Senate Committee on Military Affairs, S. 1615, introduced by Senator Sheppard, of Texas.

A bill introduced by Representative Knutson, Minnesota, and pending in the House Committee on Ways and Means, H. R. 6068, provides that on all ethyl alcohol withdrawn and used for other than beverage purposes the tax shall be \$1.10 a gallon.

Senator Wagner, of New York, proposes in S. 1964 to authorize national banking associations to contribute to community funds, or to charitable, philanthropic or benevolent instrumentalities conducive to public welfare such sums as their boards of directors may deem expedient and in the interests of the association. This bill has passed the Senate and is pending in the House Committee on Banking and Currency along with a companion bill, H. R. 5763, introduced by Representative Barry, New York.

The provisions of the United States Employees' Compensation Act would be extended to cover (1) all civil officers of the United States, by S. 1416, introduced, by request, by Senator Ashurst, of Arizona, which has passed the Senate and is pending in the House Committee on the Judiciary; and (2) enrollees in the Civilian Conservation Corps suffering disability or death resulting from injury while in the performance of duty, by S. 569, introduced by Senator Hatch, New Mexico, and pending in the Senate Committee on Claims. Provisions of the Longshoremen's and Harbor Workers' Compensation Act would be extended to bowmen and raft men employed in lumbering operations on navigable waters by S. 2134, introduced by Senator Schwollenbach, Washington, and H. R. 5727, introduced by Representative Coffee, Washington, pending, respectively, in the Senate and House Committees on the Judiciary. S. 835, introduced by Senator Wheeler, of Montana, proposes to provide compensation for disability or death resulting from injury to employees of contractors on public buildings and public works. This bill has passed the Senate and is pending in the House Committee on the Judiciary. Another bill, S. 2862, introduced by Senator Wagner, of New York, proposes to provide compensation for disability or death resulting from injury to employees of interstate carriers. This bill is pending in the Senate Committee on Interstate Commerce.

Hospitalization and, in some instances, medical services would be supplied (1) to the wives and dependent children of officers and employees of the Lighthouse Service by S. 2226, introduced by Senator Sheppard, Texas, and pending in the Senate Committee on Commerce; (2) to members of the National Guard, Officers' Reserve Corps and Enlisted Reserve Corps who are injured or become ill while on active duty under proper orders in time of peace by H. R. 4685, introduced, by request, by Representative May, of Kentucky, and pending in the House Committee on Military Affairs; (3) to persons aboard or operating any vessel in fishing operations by H. R. 3141, introduced by Delegate Dimond, Alaska, and pending in the House Committee on Merchant Marine and Fisheries; (4) to certain employees in the Bureau of Marine Inspection and Navigation of the Department of Commerce and to licensed local pilots of the United States by H. R. 902, introduced by Representative Smith, of Washington, and pending in the House

Committee on Merchant Marine and Fisheries, and by S. 1007, introduced by Senator Bone, of Washington, and pending in the Senate Committee on Commerce; (5) to retired enlisted men of the Army, Navy, Marine Corps and Coast Guard, under certain conditions by S. 1461, introduced by Senator Sheppard, of Texas, and pending in the Senate Committee on Military Affairs, and by H. R. 2893, introduced by Representative Izac, of California, and pending in the House Committee on Military Affairs, and (6) to retired personnel of the Army, Navy, Marine Corps, Coast Guard and Fleet Naval and Fleet Marine Corps Reserves by S. 1460, introduced by Senator Sheppard, of Texas, and pending in the Senate Committee on Military Affairs, and by H. R. 2892, introduced by Representative Izac, of California, and pending in the House Committee on Military Affairs.

A surgeon and ship hospital will be required on every steamer of the United States or of any foreign country navigating the ocean and licensed to carry more than twenty-five passengers that leaves or attempts to leave any port of the United States, except steamers between ports of the United States less than 500 miles apart if a pending bill is enacted, H. R. 2404, introduced by Representative Sirovich, New York, and pending in the House Committee on Merchant Marines and Fisheries.

H. R. 4923, introduced by Representative Geyer, California, and pending in the House Committee on the Judiciary, provides for the forfeiture and seizure of matter sent through the mails relating to contraception, abortion or matter designed, adapted or intended for any indecent or immoral use.

The retirement of nurses, attendants or orderlies in any neuropsychiatric hospital or ward in any hospital operated by the government of the United States after the completion of twenty-five years of service is proposed by H. R. 3055, introduced by Representative Randolph, West Virginia, and pending in the House Committee on Civil Service.

Representative Gross, of Pennsylvania, proposes by H. R. 6576, pending in the House Committee on Agriculture, to authorize the Secretary of Agriculture, in the interests of the public health and as a relief to the dairy industry of the country, to prepare and cause to be published a series of articles and advertisements promoting the consumption of milk and dairy products. S. 168, introduced by Senator Nye, of North Dakota, and pending in the Senate Committee on Finance, and H. R. 4311, introduced by Representative Gearheart, of California, and pending in the House Committee on Ways and Means, propose to prohibit the importation of dairy products produced from milk or cream other than from cows either accredited free of bovine tuberculosis or under test for bovine tuberculosis. A similar bill, H. R. 5475, pending in the House Committee on Ways and Means, was introduced by Representative Gehrmann, Wisconsin.

H. R. 6652, introduced by Representative Boren, Oklahoma, authorizes the Secretary of Commerce, through the National Bureau of Standards, to establish and publish standards of quality for consumer goods, excepting food, drugs, cosmetics and other articles for which federal standards are now provided by law, when in his judgment such standards are in the interest of public health.

The imposition of an additional tax of 10 cents a pound on oleomargarine is contemplated by H. R. 245, introduced by Representative Culin, New York, and pending in the House Committee on Agriculture. Another bill, introduced by the same author and pending in the same committee, H. R. 246, proposes to prohibit not only the importation and interstate transportation but also the manufacture, sale, offering for sale or possession for sale of (1) any oleomargarine, margarine, butterine or other substitutes for butter manufactured from any fat other than that of milk or cream, and (2) any milk or cream or substitute thereof which contains any fat or oil other than that of milk.

Four bills are pending in the House Committee on the Merchant Marine and Fisheries proposing to construct a marine hospital in Florida: H. R. 3700, introduced by Representative Peterson, H. R. 3578, introduced by Representative Cannon, and H. R. 2983 and H. R. 4427, introduced by Representative Green, all of Florida. Four other bills have been introduced by California Representatives to construct a marine hospital in California: H. R. 3214, introduced by Representative Geyer, H. R. 5577, introduced by Representative Izac, and H. R. 6983, introduced by Representative Welch, all pending in the House Committee on Merchant Marine and Fisheries, and H. R. 6558, introduced by Representative Geyer and pending in the House Committee on Naval Affairs.

The construction of a hospital for the insane of Alaska is proposed by another bill, H. R. 2963, introduced by Delegate Dimond, Alaska, and pending in the House Committee on Territories.

Another pending bill, H. R. 7243, introduced by Representative Starnes, Alabama, proposes to make appropriations for public works projects. It provides that not to exceed \$50,000,000 shall be allotted to federal agencies for such projects, to include specifically projects for hospital and domiciliary facilities of the Veterans' Administration and projects for hospitals, quarantine and laboratory facilities under the Public Health Service. Other funds are to be utilized, it is proposed, in making loans or grants to public agencies and to nonprofit corporations for the construction, improvement or extension of hospital facilities, for sewage treatment or disposal plants and for the elimination of pollution in streams. The bill is pending in the House Committee on Appropriations. S. J. Res. 169, introduced by Senator Smith, South Carolina, proposes to direct the Commissioner of Public Works, out of any funds available to the Public Works Administration, to pay to certain named hospitals specified amounts as federal grants "representing 30 per centum of the cost of the self liquidating projects heretofore undertaken by such hospitals with money loaned by the Federal Emergency Administration of Public Works." Among the hospitals so named are the Allegheny General Hospital, Pittsburgh; Community Hospital Association, Battle Creek, Mich.; Frances Mahon Deaconess Hospital, Glasgow, Mont.; Franklin Square Hospital, Baltimore; Greene County General Hospital, Waynesburg, Pa.; Huron Road Hospital, East Cleveland, Ohio; Jewish Memorial Hospital, New York; McLeod Infirmary, Florence, S. C.; Public Health Association, Tulsa, Okla.; Robert Packer Hospital, Sayre, Pa., and Weymouth Hospital, South Weymouth, Mass. This joint resolution is pending in the Senate Committee on Appropriations.

ANNUAL CONFERENCE OF SECRETARIES OF CONSTITUENT STATE
MEDICAL ASSOCIATIONS*Held in the American Medical Association Building, Chicago, Nov. 17-18, 1939**(Concluded from page 61)*

SATURDAY, NOVEMBER 18

Rural Medical Service

DR. F. S. CROCKETT, Lafayette, Ind.: Three or four years ago the Associated Women of the American Farm Bureau began to pass resolutions annually calling for better health, better medical care and better hospitalization for rural America. Through the offer of the full facilities of the American Medical Association and a promise of sympathetic consideration on the part of our organization, they reversed a radical resolution and adopted one calling for further study of the whole subject of what could be done by the medical profession and by the farmers themselves. Now these women and their husbands, who form the American Farm Bureau, some 400,000 or more in number, are not asking for government aid in the sense that they expect the government to give them medical care. They have never, so I have been assured, passed any resolution endorsing any form of governmental medicine. They are interested, however, in paying for medicine, for good medical care, and having it arranged, if possible, in line with their ability to pay for that service. In certain ways they have some complaints. I know that in my own community there is still some survival of the old horse and buggy method of charging \$1 a mile to the farmer who, if he lives out 10 or 15 miles, is called on to pay exorbitant fees, which makes it absolutely impossible for him to have many calls on the sick members of his family. That isn't a custom that would stand out as the broad usage but, after all, it occurs often enough for it to become something of a bone of contention with them, a thing which makes them feel a certain injury, and rather justly so. I think we have talked enough about it in our own state of Indiana to have some feeling on the part of doctors that there should be some correction, and the thing hasn't been fully decided, although it should be considered on a time consumed basis, as well as service rendered.

In taking this up I have received considerable encouragement from the national organization of the Farm Bureau at its headquarters in Chicago at a conference of its national leaders in Columbus, Ohio, at a midwestern conference of the presidents and state officers of farm bureaus in the middle-central group of states, all of whom have received this discussion as it has grown with considerable assurances to me that they think we are on the right track. However, I am not so sure that the thing is far enough along for action or, after all, just what the farmers themselves will think about it. Many state and national officers will agree to something because it is fine or the intent is good, but the people who are involved in it personally may lack some of that enthusiasm, not care for it, or feel it doesn't meet the problem. For that reason I went to the township and county farm bureaus around my own home community and got some very interesting material.

John Dewey's statement that social advance in a democracy is largely dependent on a high moral concept of the worth or value of the individual epitomizes the urge that prompts our planning for better medical care.

Indigence for those who want to work can hardly be called a problem in rural areas, since the opportunity for obtaining food is everywhere at hand. Intelligent self interest and thrift are no more universal in the country than elsewhere, so that those who, while able to feed, clothe and shelter their families find it difficult to meet the cost of any catastrophe, form a considerable percentage of our farm population. It is this group that would benefit most, but any plan to improve the general level of health in rural America would have to include larger groups, embracing also many in comfortable circumstances. There should be no objection to this inclusion of the well-to-do if in the planning it is not contemplated to ask a reduction in the currently recognized fee schedule of the medical profession.

In dealing with unpredictable risks such as sickness, it is necessary to invoke the principle of insurance. The most recent

interesting experience has been with voluntary group hospitalization. This type of policy charges a definite sum of money and in return gives a certain amount of service.

Increasing popularity has been accorded this effort to spread the costs of hospitalization, as is evidenced by its appearance in many of the larger cities in many states, while a number of other states are contemplating legislation permitting this form of insurance, mentioned repeatedly yesterday. The benefits offered by the various plans have varied somewhat in detail but they all give a certain limited number of days of hospital care, usually from twenty-one to thirty days. The subscriber is entitled to a bed at the \$4.50 or higher rate mentioned, while certain charges usually appearing on the hospital bill as extras are given without extra charge. These extras are most often laboratory, operating room and x-ray diagnosis. The premium varies from \$9 to \$12 annually. This rate is based on the actuarial expectation that the hospital use will average one day a year for the individual member. This adds up to an expected subscriber cost of \$6, for which \$9 is charged, the difference being used for administration and the creation of a reserve fund.

In many of these plans the members of a subscriber's family are entitled to benefits through payment of additional dues or on the basis of a percentage reduction in rates. With an annual rate of \$9 per member, the wife is included at \$16.20 and for a family of any size \$21. These rates are made on the condition of collection by the employer through deduction from the payroll.

The expense of sickness and accident has been the object of numerous plans. Certain consumer groups have employed physicians, commercial companies have put out cash indemnity contracts, county and state medical societies have formulated plans for low income groups, all of which have had some measure of success. No plan seems applicable to all groups so far as their special needs are concerned. Too often the contract is notable for its exceptions rather than its benefits. As a physician, and having intimate experience with the problem, I have often seen the subscriber disappointed. Many commercial companies seem to warrant the criticism that their contracts are administered for the benefit of the company rather than the so-called beneficiary.

In contradiction to this commercial attitude, any plan we formulate should have in mind the sole purpose of giving "better medical care to Rural America" through the most liberal benefits possible for the price charged. The benefits must be in the form of cash indemnity for all or part of the expense incurred. This would preserve the patient's right to select his own physician, a very important element in good doctoring.

The plans of commercial companies covering sickness and accident differ in many details but all seek to indemnify the subscriber in part or in full for the expense of sickness. One of the best most recently proposed contracts divides the liability into four parts and charges for each as follows: 1. Hospital at 60 cents (men) and 70 cents (women) per month (from \$7.20 to \$8.40 annually, \$4.50 per day bed). 2. Surgical operations limited as per attached schedules. Very low fees. Fifty cents (men) to 60 cents (women) monthly (from \$6 to \$7.20 annually). 3. Medical care at \$2 per call for limited number; from 60 cents (men) to 70 cents (women) monthly (from \$7.20 to \$8.40 annually). 4. Special nurse at an additional rate. It is stated that these rates are possible only if members can be handled in groups and dues collected without expense to the company. Counting up these services that must be included in our plan, the dues charged by this company would add up to \$1.70 a month for men (\$20.40 annually) and \$2 a month for women (\$24 annually). These rates are cheap if one suffers illness of any magnitude but are a fairly heavy drain on the average pocket book, especially when no illness is experienced. Where the premium for such protection exceeds a nominal amount, such as one might gamble on any chance-taking proposition, the urge to take the negative side of the gamble and bet that one will not need it actually dominates one's action. That is, when the cost requires some planning and saving, one usually decides not to take the insurance.

Any plan for better health for rural America should include medical and surgical as well as hospital expense provisions, provided through nominal dues. It is recognized that this is a difficult problem to solve.

The farming community forms a class able to meet its day to day expenses. The expense incident to ordinary illness seldom proves a hardship for these people to meet. My own experience would tend to prove that bills not exceeding \$100 are met with fair promptness, while bills of \$50 or less are often paid on the spot. General discussion with farmers, covering the point at which debts become a burden, supports this observation. What then should be the thought, the philosophy, guiding the formulation of our plan?

1. We should aim to improve the level of rural health by observing several principles in the formulation of our policy:

A. An annual health examination should be provided for all over 50 years of age and an initial examination for all subscribing members.

B. The cost of any one illness and any one hospitalization during the membership year should be limited to the subscriber.

C. The benefits accruing should be as liberal as possible, having in mind the amount of dues paid. We are taking advantage of the fact that we are dealing with a limited group having a common economy. For instance:

(a) Benefits should include inducements for better obstetric care by greater use of the hospitals.

(b) It should encourage members to make use of curative measures rather than through exceptions, which make it difficult. Physical conditions discovered by the examination should be promptly corrected.

(c) It should include quarantinable diseases for the protection of the family.

(d) It should permit the treatment of present diseases under some plan such as the payment in advance of several years' dues or some other equitable provision.

(e) The social value of facilitating the cure of venereal diseases under some provision requiring quarantine should be given consideration from the standpoint of family and community protection.

D. The subscriber should have selection of his own physician and his preference of hospitals.

E. Cooperation of county medical societies must be obtained along with their agreement to abide by the local fee schedule. This would protect the premium pool from exorbitant charges, which might be made in some instances when it is learned that the fee is to be paid from insurance.

F. Each county farm bureau should cooperate to secure members and collect dues and transmit them to the management without cost.

G. No one should be refused a second or subsequent membership solely on account of ill health, though some provision for the protection of the premium pool would have to be made.

H. Prevention of chiseling by a few doctors should be provided through a grievance committee appointed by the county medical society to review questioned charges, and chiseling of members should be guarded against through a comparable committee appointed by the local farm bureau. Some such plan would afford protection against misuse of the premium pool.

I. A reserve fund should be created as early as possible.

J. An executive organization should be created to administer the plan. This should include the compilation of statistics on which future policies could be based.

2. The annual dues should be of a nominal size. They should not exceed an amount the majority of farmers could gamble and lose without a sense of money loss or self denial.

3. The policy of administration must be liberal. The motive must be to encourage members to seek correction of their disabilities.

My earlier plan undertook to indemnify the subscriber for expense up to a certain limit for doctor bills and hospital costs. This is the usual pattern. It seemed necessary that each service should be written as a separate risk; doctor bills in one policy, hospital bills in another. The difficulty of possible overuse where wage loss did not enter as a deterrent factor made this liability difficult to estimate. A plan of this kind could afford

only limited coverage at an annual charge of \$10 for medical expense and another \$10 for hospitalization.

I have discussed the general principles involved as outlined, at a number of township farm bureau meetings in my own community. There seemed to be agreement that some form of protection would be desirable. It was evident, however, that the costs required by an all inclusive protection would be too large to be attractive to most farmers. From \$20 to \$25 a year for each member for both medical and hospital coverage seemed rather high, and it became even more difficult when other members of the family were included. The demand was for something that would give assurance against bills becoming too large: some plan that would limit the expense of any one illness to a level not too difficult to pay and afford protection against heavy expenses that come from major illnesses.

Turning to insurance in other fields for inspiration, I was impressed with some of the plans covering automobile risks. You are all familiar with the coverage of damage to the car. If one wants the company to make good every scratch and dent, it can be had at rather a high premium. If one will absorb the first \$50 expense incident to any damage, the premium is very small; yet the protection against heavy loss is provided for.

The principle of limiting one's liability for damage incident to any general type of accident or illness has been incorporated in a medical and hospital policy. It is proposed that, if the subscriber will pay a certain first part of any doctor bill and another certain first part of any hospital bill, the remainder of the expense can be met by the insurance group at a very nominal premium. The amount of dues naturally determines both the relative amount of the subscriber's limited liability and the extent of the benefits bestowed.

At present \$10 seems the favorite size for dues, so I will discuss what could be done with this amount of money. With \$10 dues setting the limit of the premium pool from which must be paid the expenses of administration, the creation of a reserve and the benefits, I have tried to meet the requirements mentioned earlier.

It has seemed important to many of us that an annual health examination should be included in the benefits. Its cost may vary within wide limits. It would be financially impossible with the suggested dues to pay for extensive services. The type of life insurance examination deemed adequate for the purpose by well established insurance companies would seem adequate for this kind of health audit and could be given subscribers at a cost of \$3. It would seem advisable that all new members should have such an examination and the report filed in the home office. For those 50 years or older it might be well to reexamine at yearly intervals. No policy I have read contains this provision. Far reaching benefits should accrue to the members from this unique privilege through the early discovery of incipient disease. This alone would do much for better health for rural America. Some inducement should be included to encourage the greater use of hospital facilities for expectant mothers, with its greater safety for both mother and child.

The inclusion of several features having great social value that are excluded in present forms of group plans, such as the care of venereal disease under quarantine and the use of hospitalization for the diagnosis of tuberculosis and mental disorders would add something to the item of liability. Their value in promoting a higher degree of rural health should make their inclusion highly desirable.

Discussion of these problems with farmers has been instructive. While divergent views have been expressed, the impression now prevails that the subscriber should absorb the first \$50 of any medical or surgical expense and the first \$25 of any hospital expense. This would limit the cost of any major catastrophe to \$75, with dues at only \$10. The desirability or necessity of placing any limit to the liability of the group has not been determined, but it is my hope to pay all expense above the \$50 and \$25 mentioned; but this would have to be guided by future experience. It would be advisable to put in some limit in order to protect the fund. The possibility of some lower rate where large families are concerned is under consideration and can be solved only with further study.

In summary, it is proposed that we achieve better health for rural America by the organization of a mutual nonprofit plan

the provisions of which would be written to meet the needs of the farmers. The right of the subscriber to his own choice of physician and preference as to hospital must be maintained. It should provide a health examination for every one, and for those over 50 this should be repeated at frequent intervals. It should be so written that the subscriber is encouraged to keep in good health and where need exists to have the condition corrected. It should not be just another insurance plan. It should be written and administered with the object of improving the general level of rural health. The dues should be kept at a nominal size and to do this the subscriber should carry a portion of the risk. Remuneration for the physician and hospital should be on the basis of recognized fee schedules for doctors and maintenance costs for hospitals.

DISCUSSION

MR. J. G. CROWNHART, Wisconsin: I was much impressed with Dr. Crockett's work, because I have known of the work he has done with rural groups. I doubt that many of us appreciate what far reaching effect that has had with my own state in smoothing out an understanding, if I may put it that way, that medicine is interested in the problem of those who live in rural areas and not exclusively with those who are employed in large industry. It seemed to me that Dr. Crockett brought out clearly in his paper the major difficulty that arises in these plans, with the desire of the physician on the one hand and the asking—if I may put it that way—of the rural groups along the same field that the service be broadened and, on the other hand, the financial difficulties they have when the premium is high. It seemed to me that it would be proper, in connection with Dr. Crockett's general subject, to bring out the fact that one unit of our government has gone far in this whole problem of serving rural families. I refer to what is now known as the Farm Security Administration. The Farm Security Administration has adopted the principle of voluntary sickness insurance. It is not on a cash basis but, as in so many voluntary plans, the physician becomes the real insurer. We had some interesting experiences suggesting to the Farm Security Administration in Wisconsin that, recognizing that your clients are in a low income group, after you have made this loan you establish the percentage that should be taken from the minimum fee schedule and then just assure us that whatever that percentage is the physician will receive it. I can assure you that the Farm Security Administration was not at all interested in that plan. The physician must be the insurer of the plan. Dr. West suggested yesterday that in these various plans their experimental nature has perhaps not been emphasized sufficiently before the public. I think it fair to say that the program of the Farm Security Administration in dealing with rural groups is not an experimental thought in its mind except as to the final plan it will put before the country. I have here a compilation of its figures. It serves 60,000 families now in more than twenty-four states and in more than 200 counties. It refers to the plan as the report of the development of the Farm Security Administration, medical care program. I was impressed in all the contacts we have had with the Farm Security Administration that a great many of its clients are in no different financial circumstances after they have once received the loan than the vast majority of the people living in the same county in that rural situation. Once we enter on a plan to accept this principle I have no doubt at all that the demand, should it be made, would be extended to all other people in similar circumstances. I question how we can explain that it is really given to those who borrowed money from the government but to no one else. I think we sometimes are of the opinion that, because the man has a loan, he is in the public assistance group. Let me assure you that, as we have checked some of these families in Wisconsin, we find that, while they may borrow from the government and that may be the only source of their income at the time they needed the money, with a favorable crop condition last year all these clients were in just the average condition of all farmers in that particular county. It seems to me that the plans of the Farm Security Administration need to have real consideration when we discuss a subject as broad as rural service.

DR. HOLMAN TAYLOR, Texas: We must remember that while the Farm Security Administration client does borrow money from the federal government he does so because he has been

selected by the federal government as a guinea pig on which to work out an experiment. The primary purpose of that service is to take the farmer, teach him how to set up his farm, how to run his farm, how to buy what he needs and how to determine what he needs, how to sell his crop, and how to use the money and take care of all these resources, whatever they may be. That is the primary purpose of that service. These farmers are in a special class. They are people who the government believes can be rehabilitated and, with a minimum or perhaps maximum of effort, taught to make a living for themselves and their dependents on the farm. The fact that they need to keep well while they are doing this was slow to dawn on those in authority, I believe, and it was some time after this service was inaugurated before the farmer was permitted to borrow money with which to pay for medical care. Every dime this farmer borrows is earmarked for some purpose, \$130 for a mule, \$30 for a cow, so much for this, so much for that, and so much for medical service. The bone of contention has been the relative amounts involved, and particularly medical service. In our section of the country it has been determined that the financial or economic status of the farmer would enable him to borrow from \$10 to \$15 or \$20 a year with which to pay for medical service. An effort to determine how much of this money is ordinarily used by the farmer in his yearly conduct was not very productive, because they are coming under a new regimen, coming under new conditions now, and are going to be taught to live so that they won't get sick. That makes an entirely different setup from that which the physician faces when he contemplates service for the farmer, as in rural Texas. When it was put up to the State Medical Association of Texas to determine whether the doctors of Texas could be permitted—if that is the proper word—to participate in this enterprise, we went into the matter rather thoroughly. We made an agreement that the matter should be put up to the county medical societies and locally the doctors would determine whether they would enter the plan or not. We set a few bounds. We insisted that the percentage of money a farmer could borrow for medical service should be raised, to which the authorities assented. Then we provided that there should be no pooling of funds. The only opposition our Council on Medical Economics had to the pooling of funds was the fact that it would set up a pattern for the organization of cooperative groups, and sickness insurance for the purpose of providing sickness benefits. Subsequent to the time we made this contract, the House of Delegates of the American Medical Association decided that such groups would be within the bounds of medical ethics. They have pooled the money all over Texas, and it has worked out beautifully everywhere except in one place, where there is one enterprising physician on the payroll at the cost of the other physicians. Where there has been proper regard for the relative values of things, there has been no question that it will work out, even on the narrow margin of from \$10 or \$15 to \$20 a year per farmer. The system followed is to pay off once each month, taking one twelfth of the money set up and paying it out in accordance with the regular bills turned in by the doctors who have served these people. If there is any surplus money after that has been done it goes over into the national fund, but where there is a deficiency the doctors take a cut on their bills.

DR. H. H. SHOULDER, Tennessee: Dr. Taylor, would you answer a question? What are the limits of services under the plan in Texas?

DR. TAYLOR: Under the plan in Texas you serve the family for the year, regardless of what it costs.

DR. SHOULDER: Is it complete service, hospital and all, or just home calls?

DR. TAYLOR: I believe there is excluded the usual venereal diseases and catastrophic situations.

DR. SHOULDER: Are hospital expenses paid?

DR. TAYLOR: No. The Farm Security Administration has access to a fund which can be used in limited amounts to pay for catastrophic illnesses and for hospital service and extraordinary service that is not contemplated in the setup.

DR. SHOULDER: With reference to the pooling of funds, is that done by counties?

DR. TAYLOR: It is done by counties too, but not always. The Farm Security Administration has districts. Sometimes those districts cover two or three counties, or portions of some counties and portions of others.

DR. SHOULDERS: In the event of a prolonged illness, the one person who has the loan, would he be paid out of the common fund? Some doctor who looks after him, will he be paid out of the common fund for his services?

DR. TAYLOR: Not for the catastrophic illnesses. I understand there is a fund from which they can get that money. As I understand it still further, in some sections of the country this fund to which I refer has been added to the pool to start with. That has not been done in Texas.

DR. MORRIS FISHBEIN: I believe the question discussed by Dr. Crockett is probably more important than many of the other points that have been considered, simply because of the fact that the farm group is of special political importance. Those agencies in the government that are seeking to bring about fundamental changes in the nature of medical practice are aiming particularly at the farm group. Dr. Crockett has done a fine piece of work in endeavoring to develop a plan that would apply specifically to the farmer and which would keep the medical care of the rural group in the United States out of the hands of the politicians. The Farm Security Administration plan was introduced first in North Dakota and failed first in North Dakota. Other states have come along one by one. If we had endeavored to make our decision as to the Farm Security Administration's work wholly on the basis of North Dakota, there never would have been another state to try it. It is quite conceivable, as Dr. Taylor says, that in Texas it has been fairly successful, but it is also quite understandable, as Mr. Crownhart has emphasized, that in this plan the doctor is the real insurer. In other words, wherever the plan fails, it is the doctor who makes even. It is the adjustment of the doctor's fee which permits the plan to function.

This plan has been sold to the medical profession of the country. Agents of the Farm Security Administration have circulated freely among the various counties of the United States and, in speaking to county medical societies, have served as salesmen for the plan. In few counties indeed have there been any opposition salesmen selling any other plan or endeavoring to show the faults which lie in the government plan. Occasionally in certain counties—this happened, I believe, in one county in Colorado—the physicians took the trouble to appoint two men to find out everything that could possibly go wrong with the plan in that particular area. Those two men made a special study of the matter over a considerable period of time. Then when the government agents appeared to sell the plan they found that there were a lot of questions to be asked which they had difficulty in answering in that particular area. The plan was not adopted with the enthusiasm with which it was greeted in other areas where the government salesmen had entirely their own way in projecting this to the doctors of the county. Again I would say that whenever such an offer comes up from any sort of an agency it is important to have men who have made a special study there to discuss the matter with the government. If the doctor is going to be the insurer the doctor will frequently find, as insurance companies sometimes find, that he is the one who holds the bag when everything conspires to make things go wrong. All of us know that, whenever a new insurance plan is put into effect for any group, innumerable diseases are discovered which have not been apparent up to that time or which have been considered as of little or no importance. It is remarkable how many hernias come to light whenever a new plan is suddenly inaugurated. Hernias appear with which their owners have lived comfortably and indeed enjoyably up to that time but which on that particular occasion assume a new importance. It is important to find out how much you can get safely for so much money. That approach to the problem made by Dr. Crockett and his group I consider fundamental from an economic point of view. Find out how much the family can actually put up, or your person who is to be insured can actually spend, and find out from various agencies what they are capable of giving for that amount of money.

When the many plans were brought up here yesterday afternoon, one distinguished gentleman from Iowa made the state-

ment that "the boys are just passing the ball around"; they haven't started to play yet. Really, that is a vital observation. We are experimenting. We are trying out a lot of new plans. They seem marvelous before the game starts, but when the game starts you suddenly find blockers appearing out of nowhere to bring all sorts of new situations that you have not contemplated. Therefore, whenever a plan like the Farm Security Administration plan is set up in one state, that is no reason why forty-seven other states should immediately adopt that plan. The idea of the first two visits being deductible always appealed to me as a great idea, exactly as in motor car insurance you have the first \$10 or the first \$25 or the first \$50 deductible. But everybody knows there are men who endeavor to take advantage of insurance companies. I don't believe any one has yet worked out a way to stop chiseling under a deductible plan, even motor car deductible plans; with human beings it is still more difficult. Unless you can give complete insurance easily, however, you are going to have to introduce the deductible feature. That can be introduced on the basis of the first two visits deductible, the first \$10 deductible or the first \$50 and \$25, as Dr. Crockett suggested, or you can make your money fit the situation more definitely by delimiting certain diseases or certain surgical conditions which will not be included in the plan. When you take off for these conditions you will find you can also reduce your premium. Perhaps that is a safer way to reduce the premium than to endeavor to work out what constitutes the first two visits. The people in Washington will tell you that if you set up a plan and immediately the workers who have been losing eight days a year from illness begin losing fourteen days from illness, it is a good thing. It means, they say, that these workers are now being taken care of where formerly they were neglected. They say that if the man who has been making on the average four visits a year to a physician now begins making twenty-four visits a year to a physician, it is a good thing because it means that the diseases which he formerly neglected are now being cared for. We ought to inquire carefully as to the ultimate effect on the people of encouraging workers who have lost eight days a year from their work because of illness to begin losing twelve or sixteen days a year because of illness. We must inquire whether or not the cultivation of that attitude, in which every small ache, pain or disturbance of one kind or another constitutes a reason for hospitalization simply because somebody else is paying for it is a good thing for the nation. The experience of the Associated Hospitals Plan in New York, with great numbers of people taking vacations at the expense of the insurance company, should be a warning to others that this possibility exists ready to break down any plan, unless you guard against the possibility when it first comes up.

DR. TAYLOR, Texas: May I make a correction, please? Dr. Anderson thinks I am in error in stating that hospital fees and fees for catastrophic illnesses are not included. Anyhow, hospital fees are not taken from this regional pool. It is my recollection, however, that the hospital service is promised up to a certain amount but that that money comes from some place else. I may add to my discussion, if you will permit me to do so, that probably more than 50 per cent of the county societies to whom this proposition has been put up have turned it down in Texas.

DR. A. T. McCORMACK, Kentucky: I want to ask Dr. Crockett what his observation has been with regard to one aspect of this problem. Sixty-three per cent of our hospitals are in three cities. The Farm Bureau had a conference the other day with the Community Hospital Association in Louisville, seeking to secure for the farm bureau of the state, who compose the most successful and leading and most influential farmers of Kentucky, hospital care on a premium basis. Assuming that they purchase that hospital care, naturally they will come to the places where there are hospitals in order to get the care. They will have to. There are no vacant beds in their communities and they have to come to Louisville, Lexington or Covington in order to secure the beds. They are the only people who pay their doctors' bills in the country now. We are having great difficulty in keeping rural physicians practicing at the present time. They are all concentrating in the cities. If we are going to bring all of the patients, who pay their bills through any insurance plan, into the city to the hospital, how are we going to keep the country doctors at all for the emergency?

agency cases that are going to happen in the country? We also have this difficulty: In twenty-five counties in Kentucky, 40 per cent or more of all deliveries are made by midwives, utterly ignorant midwives, none of whom deliver more than five women a year. There are but eight midwives in the state who deliver more than ten women a year. They just chaperon, sit around and do very little good to a woman who is having a baby by herself. They pick the baby up and that is about all. With that sort of thing happening, of course the question of insurance does not appeal to those people at all. We have ten or twelve counties in which the family income is less than \$75 a year of spendable money. Of course, they are not going to buy anything. That is perfectly apparent. That is the other end of the problem. I am not sure which is the most dangerous, the Washington plan, which is working apparently successfully in most of its units, or the nebulous plans in most of the other states that are rather dreamy and sketchy and do not seem to be working at all yet. I am against compulsory health insurance, and I do not want to put in any shoe horn which seems to tend to lead us in that direction. People are demanding increased hospitalization for everything. We know that the facilities in which to practice medicine must be provided in the areas in which they are needed. In the meantime, what are we going to do in Tennessee, Mississippi or Alabama, where the hospital facilities are all concentrated in a few cities? What are we going to do with the rural population if we are going to bring people to town when they are sick?

DR. SHOULDERS: I arise to endorse the statement and to express an anxiety too concerning one made by Mr. Crownhart, and that is the danger of a certain sampling of the population.

DR. McCORMACK: Will you let me say that in Kentucky no county society has accepted the Farm Security Administration proposition? It is tempting because it offers you cash, but it does not offer you any cash that you cannot get along without.

DR. SHOULDERS: Some counties in Tennessee did. There were 4,000 families the Farm Security Administration had determined were qualified to obtain the loan. As a matter of fact, those families in the main were families which owned a farm and, in their attempts at unnecessary expansion, lost it. They were productive people, far more capable people than most of the tenant class, or others below. I should say they were a superior group. The Farm Security Administration then selected the best. They were selecting them as risks on the basis of a loan. They were just barely unable to obtain a bank loan. The danger is that they are going to take a superior element of the population and, from an experience with that group, determine what the experience should be with a group much lower.

DR. TAYLOR: The Farm Security Administration turns these clients back into regular channels as soon as they demonstrate their ability to make a living.

DR. SHOULDERS: It contemplates doing it; I don't think it has ever done it. No tenant in Tennessee has ever obtained a loan unless he once owned a farm or showed that he was once that capable. He is really a good risk from the standpoint of a loan.

DR. GEORGE H. KRESS, California: The medical care of the agricultural and rural population in California is a big problem, not only from the standpoint of the large number of agricultural workers who own or operate farms and ranches, but because of that other large group of migrant workers referred to in Steinbeck's "Grapes of Wrath." As Dr. Crockett has pointed out, some of the organized agricultural groups in certain parts of the United States are not kindly disposed to the medical profession. In California we learned that to our sorrow last year, but by meeting in friendly conference, the seeming misunderstanding was overcome. The Council of the California Medical Association, consisting of some twenty-one physicians, put in an entire day with the farmer groups, going over the problems of medical care in rural districts, as the farmers and ranchers understood them. This was important, because all parties knew that a proposed compulsory health law would be submitted, with endorsement by the state's governor, at the legislature which would convene in January 1939. Through the voluntary medical service organization known as the California Physicians' Service, a nonprofit corporation organized for state-

wide medical service, under the sponsorship of the California Medical Association, it was possible to secure the cooperation of the agricultural groups. The attempt to pass the compulsory health act in this year's legislature resulted in failure, but the proponents of the compulsory health plans are still very active and are carrying on a well organized publicity campaign in promotion of their aims.

The migrant or itinerant farmer or rancher problem in California is based on the fact that each year a floating population of more than 200,000 persons comes into the state from the South and West, hoping to earn their living through work in the fields and orchards. To help meet the issues arising, the Farm Security Administration came into California and formed a new nonprofit corporation, the "Agricultural Workers Health and Medical Association," consisting of representatives of the Farm Security Administration, the board of health, the California Medical Association and others, to make up a board of seven directors. The government made an initial loan of \$100,000 to this corporation to get it started, and this corporation in turn made contracts with the hospitals in the various districts to supply hospitalization services. A fee table was established for members of the medical profession. This organization was a new departure on the part of the federal government, and it is the testimony that, to date, it has done its work efficiently and in harmonious cooperation with other state agencies, such as the board of health. The service plan intended to supply the medical needs of citizens belonging to the lower bracket income groups of California (which was brought into being by the California Medical Association through action at a special meeting of the California Medical Association house of delegates in December 1938) began its corporate existence in February 1939 as the California Physicians' Service, with headquarters offices in the Mills Building in San Francisco. It is working in cooperation with the three nonprofit hospital organizations in California, which are under the supervision of the insurance commissioner. The statewide scope of this medical service and hospitalization plan that is working under the sponsorship of a state medical association necessitated careful attention to a host of details, so that initial progress seemed slow to some. However, the California Medical Association had had its lesson on hasty action in the California Medical-Economic Survey, in which more than \$50,000 of its reserve funds had been spent for little purpose, seemingly, other than to bring out, under the supervision of a doctor of philosophy-director, facts regarding illness quite well established through previous investigations. In the California Physicians' Service each physician, as a professional member, paid a registration fee of \$5. Of the 6,000 members of the California Medical Association, almost 5,000 have registered. Professional membership is not limited, however, to members of the California Medical Association. These registration fees provided \$25,000 for initial work, and the California Medical Association lent the new corporation \$15,000 in addition. The California Medical Association, having embarked on this enterprise, is determined to see it well established, even though the initial financial costs are heavy. An additional \$10,000 loan has been authorized. Slowly perhaps, but firmly, the California Physicians' Service is making a place for itself, in spite of the stiff opposition of commercial insurance companies. The official journal of the California Medical Association, *California and Western Medicine*, prints each month bulletins in which the progress of California Physicians' Service is outlined. Every effort is being made to promote its interests, and that on a sound actuarial foundation.

All signs point to the placement of a compulsory health initiative on the state election ballot of November 1940. Before that time, California Physicians' Service should be functioning so well that the voters of the state will have received their answer to the question "Where can we secure health and sickness protection, in a sound organization that uses the insurance principle and permits the patient to choose his own physician, and to secure the best possible type of medical service and care?" For the present, California Physicians' Service offers no medical service to individual signers. The smallest group to be covered must contain at least five individuals. Two types of insurance are offered, one at \$2 a month and the other at \$2.50 a month. If the beneficiary member, that is, the subscribing or patient member, is willing to pay for the first two visits, the charge for

the medical service and hospitalization is \$2 a month. If the beneficiary member does not want this type of service, the coverage costs \$2.50 a month. I think that is a much wiser plan than asking people in very moderate circumstances to pay from \$25 to \$50 a month as a sort of preliminary entrance or enrolment fee, because when it comes to selling this type of insurance the lay persons whom we are trying to help do not have much money. However, they may be willing to come in on a two dollar a month charge. It is amazing how many persons are willing to save fifty cents a month who, without such a stipulation in the contract, might become pests not only to one but to a number of physicians on the panel, as well as to themselves.

As already stated, it is the hope of the California Medical Association to see the nonprofit, statewide, voluntary medical and hospitalization service that is operating now under the name California Physicians' Service so well under way during the next several months that the citizens of California will prefer its evident advantages to any bureaucratic compulsory plan that may be proposed for placement on the law books of the state.

DR. R. B. ANDERSON, Texas: I should like Dr. Crockett, in closing his discussion, to make clear whether or not this deductibility feature of \$50 for medical service and \$25 for hospitalization, or vice versa, as it may be, must be paid by the person holding such a policy before he can get the benefit of any medical service. That was not clear to me. I should also like him to say whether or not this proposed plan is limited to farm groups, and also whether it is available to individual families or individual persons. Those two things were not plain. I don't believe Dr. Taylor wanted to convey the impression that Texas is sold, hook, line and sinker, on any Farm Security Administration. They have made a determined drive down there, because Texas adjoins states in which they think they have operated successfully. Despite their determined drive in Texas, I don't believe there are over seventeen county medical societies that have been willing to experiment with it. I have had the pleasure of being present at some of their selling operations, and they have a good deal of difficulty in selling these doctors out there. These things they do they are going into with their eyes open, and also with consideration of the dangers it may be leading into, as pointed out by Mr. Crownhart.

DR. C. C. NESSELRODE, Kansas City, Kan.: We have tried for many years to be good to Texas. We lent them Brinkley. They used to poke fun at us and tell us what they would do to us, so we have sent him down. We think we are a little ahead of them on the Farm Security Administration. It is \$30 a year up in Kansas, instead of \$15 a year per family, and it is left entirely to the county societies. For instance, if they say "We don't care what you do with this money, whether you just treat emergencies," all they insist on in the county societies is that they treat emergencies. It is the serious, unexpected emergency that this money is supposed to take care of. A good many of the counties, however, or some of the counties have said "We know we have to take care of the emergencies anyway, so we will just take it all for the \$30." In the contract that is used as the standard contract in the state, it is recited in the contract that this is an experiment and that it is experimental in its nature. I have been much impressed with the paper that has just been read and it seems to me we are missing the point a bit in this discussion. If I understand the Indiana plan, the doctor is working with the Farm Bureau, and it is the Farm Bureau's plan. I happened to be the chairman of the Cancer Committee for the state of Kansas for a great many years, and we have tried to carry on our plan of popular education to the public through the medical societies, and invariably, when we came to the platform, the public thought we had something to sell them. In the last few years the women's clubs have taken it up. It is the women's clubs program, and all we are doing is helping in supplying the program. They are asking for meetings now, where it used to be that we couldn't force the meeting on them. If the Farm Bureau will take this matter up as a part of its health program, if it does the promoting and does the proposing under the leadership as proposed here, it seems to me that we are going a long way toward settling the farm problem. I appreciate the point Mr. Crownhart made that if we aren't careful this Farm Security Administration program will set the pattern and will have decided the future of medicine.

I think it is far better that we get behind this program over here, which appears to me to be the intelligent approach. The public is taking it up. The public is promoting it and we are helping and we are going along with the public. It is a new approach, but it seems to me to be a most excellent approach. I should like to join with Dr. Taylor in saying that I hope reprints of this paper will be made available in a short time, because this Farm Security program is being urged in all the counties of Kansas on a county unit basis. It points to the mistakes made up in North Dakota. The administration says it tried to administer the program on a statewide plan up there and it broke down because of that, and that it will succeed on a local basis. I should like further to recommend to you that you put into your contract that it is experimental. Misunderstandings will arise, and the farmer will say he didn't know it was experimental, although it is recited in the contract. It is a bit of protection for us. But the one recommendation that appeals to me is this program originating with the Farm Bureau. It is coming from the people, and we are helping them and going along with them, and that is the sanest piece of advice on the settlement of rural medicine I have heard at any time.

DR. F. S. CROCKETT: I am appreciative of the generous discussion that has been given my paper. I am grateful that many questions have been asked. I will start with Dr. McCormack's questions. I am familiar with the fact that your Farm Bureau is just now trying to inaugurate a group hospitalization plan, and I have been in correspondence with its state secretary, Mr. Kilgore. He has been listening to this plan and he thinks it is a good one, but he feels that if he can sell his people on the hospital part the rest of it will be much easier. After all, I left the lower economic group that is taken care of by the federal government through the Farm Security Administration clear out of this because, after all, they are in the same situation, practically, as any other indigent group where they haven't the money to finance anything. The government lends the farmers this money but, after all, it is more or less of an appropriation. They don't necessarily get it back. Consequently we don't expect them to have the \$10 necessary to finance each a plan or the \$50 or \$25 or the \$15 and \$25, whatever the level would be. The whole thing hooks down on to the fact that the economic feature is tied up with the amount paid, the amount the individual assumes of his first expense, a psychological hurdle which is necessary in the promotion of any scheme to see that it is not overused. In asking about the first price assumed by a member of such a plan, it could be made anywhere of course, as you know, but if you make it local you will have to put a ceiling on what you are able to pay for through your premium pool. The idea was to make it just as high a ceiling on what the medical costs would be in any catastrophe. The idea was not to pay for ordinary calls and ordinary services. These people are able to handle that themselves. They are an economic group that can meet and do meet their ordinary expenses. It is the extraordinary expenses that get them down, \$150, \$200 and so on. If we can give them a plan costing, say, \$10, which any of them might lose without feeling they had lost anything of great value, and yet protect them against excessive costs, perhaps we have solved a certain thing, that is, the effect of catastrophe. That is all they have been complaining about, the catastrophic expenses of illness and hospitalization. There has never been any complaint about the ordinary \$2 office call, and so on. That is what we have laid out a plan to meet, and the ceiling of cost to the individual per year can be made anything that suits the group.

"What's in a Name"

DR. ROBERT HOFFMAN, South Bend, Ind.: World events have demonstrated that wisely chosen propaganda constantly outmaneuvers diplomacy. Trustworthy friends of medicine constantly remind us that organized medicine blunders in opposing "socialized medicine." They avow that left wing movements compensating with money or services the underprivileges due to poverty, have developed a momentum that cannot be blocked at this time. They declare that our attempts to forestall this so-called social progress irritates the public more than it clarifies medicine's aims.

Every one familiar with the publicly announced plans of Thurman Arnold, of the Department of Justice, or the rulings of the National Labor Relations Board or the "surveys" of the

United States Public Health Service knows that this point of view warrants our serious consideration. Why not abandon the term "socialized medicine" and rechristen it "political medicine." That term catapults the burden of convincing the public back into the laps of state and federal agencies. It implies to the public that physicians object to the present movements not for selfish reasons but because they fear that any possible good vested in such movements would be nullified by political patronage, much after the fashion of parole systems, liquor control and the like, which the public holds in contempt.

Meeting Legislative Problems

MR. THOMAS A. HENDRICKS, Indiana: Facing a crisis is nothing new to any medical organization. However, modes and methods in meeting a legislative crisis have changed, and if the medical profession is to maintain its influence and properly present its side of the story to Congress and to the state legislatures it must adapt itself to these new conditions and to these new situations, and use these new methods just as an army must employ the modern technic of mechanized warfare if it hopes to succeed these days.

Of course the scope of the subject assigned staggers a fellow, as it covers the waterfront, not to mention the continent from Cape Cod to Catalina Island, with all the divergence and varying shades of opinions and diagnoses—and I'm terribly afraid I haven't anything new to offer in the way of help or suggestions. In fact, I've given up trying to offer help or suggestions after what happened at the time of the flood two years ago.

WHAT WE NEED MOST

Having lost contact with the communities and the doctors along the Ohio River, the executive committee of the Indiana State Medical Association sent me down there to offer the services of the profession to the medical brethren in the emergency. The first town in the flooded area I visited was Leavenworth, Ind., where one doctor, Dr. H. H. Deen, was located. All was under water except the church spire, but Dr. Deen was seated at the water's edge, on the side of his car, with saddle-bags over his knees, giving "running board" treatment and first aid to his patients, who formed a line, each waiting his turn. I dropped in at the end of the line, worked my way up to the doctor and said earnestly "On behalf of the officers and the 4,000 members of the medical profession of Indiana, is there anything you want, Doctor, anything in the world you need?" Dr. Deen looked up, gave me a thorough once-over and answered: "Young man, what we need most down here is a damn good lettin' alone." Dr. Deen perhaps expressed the sentiment of most of the medical profession today, but whether we like it or not the medical profession is spotlighted in the public eye and interest is centered on all medical organizations today as never before. Hence it is up to each county and state society to face the klieg lights without stage fright, in full confidence, and continue to play better than ever before its traditional role of rendering the highest standard of medical service possible to the public.

So without spending too much time in reviewing the rapidly changing national and local medical legislative picture and without discussing in detail in this short time any of the various and sundry situations confronting the profession in Washington or in the states, all of which have been treated adequately in your state and American Medical Association journals, let me emphasize some things that should be kept in mind in placing your case before the public and in presenting your side of the argument to your legislators.

HOW NOT TO DO IT

Mistakes in approach and methods are often so costly that I will list these points, of course with due apologies to Dale Carnegie, under the heading "How not to make laws and influence legislators."

1. Don't go before the legislature divided. It is always a great tragedy when the medical profession goes into an open conference divided. The great tragedy of the National Health Conference was that it was stacked and rigged to make it appear in the press and to the American public that a great schism existed in the medical profession.

2. Don't send a telegram or postal card to your Congressman or legislator saying "This bill is vicious" or "Vote against this

insidious measure." Instead of emotionalism, take the time to make your criticism constructive. One well written, well thought out, letter is worth tons of "canned" protests and petitions.

It is interesting to follow the rise and fall of the Gannett technic in this respect. You all recall that when the reorganization bill was before Congress Frank Gannett gained the reputation of inventing a new and most effective method of influencing Congress—that is, flooding the congressmen's mail with letters, telegrams, post cards of protest. And it worked. Hence it was thought that if you could get enough people to write enough letters, send enough telegrams protesting against a measure, the measure was doomed. So the opponents of the neutrality repeal bill at the recent special session thought that if they used the same method they could accomplish the same results—that is, the defeat of the proposed legislation. Although more communications were sent to Washington against the neutrality repeal legislation than ever in the history of Congress, it was passed. All of which leads us to the belief that the quantity of the mail is not half so important as the quality, and the number of letters is not half so important as whose name is signed to the letters.

In Indiana we follow the Neal system (devised, expounded and effectively worked for years by Dr. John R. Neal, chairman of the legislative committee of the Illinois State Medical Society). The Neal system is based on the theory that, all things being equal, no one has as much influence on a legislator as that legislator's own family doctor, and hence we bend our efforts in giving our story to the doctor, who in turn gives the story to the legislator.

3. Don't fail to read the piece of legislation or the bill yourself against which you are protesting or which you advocate.

4. Don't make the mistake of underestimating the intelligence and integrity of your average legislator and of the general public. Both are better informed than we sometimes imagine and both are eager for facts and knowledge from authoritative sources.

We have changed the point of emphasis of our approach to the public a bit this year in Indiana. Through the Bureau of Publicity of the state association for many years we have scattered our shots over the landscape through the press, talks before luncheon clubs, and so on. Now we are becoming a bit more specific in our objectives, the state medical association having put on a two day program at the annual state social work conference. And we shall take part in a round table discussion on poor relief at the annual Township Trustees Association convention to be held in December.

5. Don't forget that the public and legislators are keenly alert at the present on any subject that has to do with health or safety. It was said of one legislature in session last winter that the best way to assure the passage of a bill was for the advocate to state "Gentlemen, this is a health and safety measure."

6. Don't fail to have a constructive plan, if possible, to present to your congressman or legislator as an alternative plan for state or federal controlled medical services.

Dr. Van Etten was the guest speaker at our annual banquet. I'll have to confess right here that cocktails had been served, so every one was unusually eager for Dr. Van Etten's message.

"What kind of medicine do you want?" were the speaker's opening remarks.

"Do you want England's medicine or Hitler's medicine or Stalin's medicine or New Zealand's medicine or American medicine?"

"Do you want socialized medicine or state medicine or democratic medicine?"

At that point one Hoosier shouted "Democratic medicine, hell, no!" So the banquet was a success.

Dr. Van Etten's closing remarks at our state meeting, which indicate that the American Medical Association is really in a position to develop and direct any national health program, are still receiving favorable comment from the Indiana profession. He said: "I believe that our people would be responsive to an American health program if the physicians of the country could be inspired to write it." Surely these words and those spoken yesterday by Dr. Rock Sleyster and the positive platform of the Board of Trustees, that may serve as an American Bill of Medical Rights, should give us inspiration and facts with which to do the job back home.

DISCUSSION

DR. GEORGE H. KRESS, California: We are gathered together to learn from one another and to profit from our past experiences. In California we have been obliged to learn many things in the past ten years. For example, the existing chiropractic law was enacted as an initiative law, by vote of the citizens of California, on Nov. 7, 1922. In those days the medical profession did not possess a type of organization capable of going before the people to carry on the needed educational campaign, to show the difference between standards of healing art training as theoretically expounded by cultist groups and as actually maintained by nonsectarian, scientific medicine. At that time an organization known as the League of the Conservation of the Public Health came into being, to aid in the then battle. In the seventeen years that have elapsed since that period, other struggles have been to the front. In the year 1932 the Public Health League of California, consisting largely of members of the medical, dental, pharmaceutical and nursing professions, was organized and in the following year was incorporated. This organization has been militantly active in support of the public health interests of California and has rendered notable service for scientific medicine. Thus, in November 1938, when an attempt was made through an initiative law to make the state of California the guinea pig for antivivisectionist endeavors in the United States, the Public Health League of California went into the field and through excellent organization in every county in California made it possible for the citizens of California to obtain a true picture of the issues at stake. In that battle the California Medical Association donated to the Public Health League and to the newly organized California Society for the Promotion of Medical Research a total sum of \$15,000 for the distribution of educational literature among voters, in which the benefits arising to the public health, through animal experimentation, were explained. The antivivisection endeavor went down to defeat by a large vote. And again this year, on Nov. 7, 1939, after an arduous campaign, the proponents of an initiative act, designed to amend the initiative chiropractic law of 1922, saw their measure defeated at the polls by a vote of more than 2 to 1 (against the initiative, 1,852,902; in favor of the chiropractic initiative, 785,269). And this in spite of an alliance with the "Ham and Egg" promoters. Now, these rejection votes did not "just happen." They may be said to represent the considered thought and action of a large portion of the electorate of California, who were contacted by members of the medical profession and their friends. The method of organization is based on the county unit plan, as is the organization of the component county societies of constituent state medical associations. In each area the Public Health League has captains and lieutenants, each responsible for prompt telephonic and other contact to ten physicians, and so on. In the distribution of literature the members of the Woman's Auxiliary give excellent aid, for it is the wives and daughters who pick up the letters and postcards, signed by physicians, to be sent to their patients and friends. Nothing is left to chance. If time permitted it would be of interest to narrate some of the peculiar phases of this last battle with the chiropractors. I can only emphasize here the tremendous value of such a cooperating organization as a Public Health League, to bear the brunt of the active campaigning so necessary nowadays, if public health interests are to be adequately protected. Such an organization is equally effective in rural and in industrial and metropolitan centers because the whole purpose is to create organizations down to the last interested person, as has been indicated. California has experienced the merits of this system in its rural, its city, its metropolitan, its county and its state activities, and we believe the procedures would be equally valuable in national work. During the last year, in order to promote educational work concerning the medical profession, the house of delegates of the California Medical Association authorized a special assessment of \$10 (or \$60,000 in all) for use by its Committee on Public Health Education in furtherance of its educational work in promotion of public health interests. It seems regrettable that a profession whose members render millions of dollars of gratuitous service to the people of the United States should also be called on to assess itself as a conservator of preventive and public

health medicine. However, if the standards of scientific medicine are to be maintained and medical practice carried on as well in the future as in the past, there seems to be no other alternative.

DR. A. T. McCORMACK, Kentucky: I am strongly tempted to tell you how well we do this thing in Kentucky. Many years ago, in 1883, when my father became the state health officer, he appointed a medical referee in each county in the state who was responsible for the attitude of the members of the legislature and the senate. We have never had any difficulty about it. It has been long since anybody has voted against us on any of these measures; they know they are not coming back if they do, so they just don't do it. Yesterday morning I felt encouraged when I saw this splendid, practical program that is workable, that means what we mean, that says we want to preserve for the people of this country the most valuable possession they have. Besides liberty itself the most valuable possession they have is the private practice of medicine.

DR. OLIN WEST, Chicago: I wish to bring to the attention of the secretaries of the state associations the question of accepting into active membership in the county societies and in the state associations of men who have never been licensed to practice in the states where they have been taken into membership. The by-laws of practically all county and district societies in this country require that members shall be legally registered in the counties in which they reside and practice. That provision has not been universally incorporated in the constitution and by-laws of the county societies, but it has been so generally incorporated that it has become an established principle and is one of the basic principles of the plan of organization of physicians in the United States. Certainly it is dangerous for any county medical society or any state medical association to violate its own by-law. In some states the faculties of medical schools have been taken into membership simply because they were scientific men who were thought able to contribute materially to the scientific programs of those societies. They were not licensed in the states in which they were teaching and, in my opinion, were not eligible to membership in those societies. There is no provision that enables a state association to take into membership anybody who is not first a member of its component county or district societies.

DR. A. T. McCORMACK: Do not all the states require all the men who are teaching in medical schools to register?

DR. WEST: No, indeed. There are many men teaching in medical schools who are licensed in some one state, but many men who are not licensed in the states where they practice. Our society by-laws provide for a classification of associate members. Those members enjoy all the rights and privileges of membership except the right to vote. They can participate in scientific work but they are not entitled to the right to vote. If you are going to take these men into membership, in fairness to the men who must fulfil the requirements of your constitution and by-laws with respect to membership you should put them in a separate classification. The time has come when there needs to be a careful examination of the constitutions and by-laws of all medical organizations in the United States. I find that what is considered an associate member in one state is considered an affiliate member in another state. A life member in one state is considered an honorary member in another state; an affiliate member in one state is considered an honorary member in another state. What I am most concerned about is that there shall be a compliance with the constitution and by-laws. In the District of Columbia there are, I believe, more physicians who are engaged in the various medical services of the federal government than are engaged in private practice. Many of them, splendidly qualified men, are not licensed to practice medicine in the District of Columbia. If they were taken into membership, the affairs of the Medical Society of the District of Columbia might conceivably be directed by men who have no interest whatever in the private practice of medicine. I can readily understand why the Medical Society of the District of Columbia might feel it necessary to refuse the privilege of full membership but does open the doors of the society to them as associate members. There is one thing in which, in my opinion, the Constitution of the American Medical Association is absolutely perfect. I shall read that section: "The objects of the Association are to

promote the science and art of medicine and the betterment of public health." There can be no higher, no more idealistic objects any organization could have than those. The door of membership in the American Medical Association is the door of membership into the county medical society. The Association has provided for Fellowship, associate, affiliate and honorary Fellowship. Those who are accepted into associate Fellowship enjoy all the rights of Fellowship. But we have in many places distinguished men not eligible for regular membership who want to participate actively in all the affairs of the organization in the places where they live. We now have two or three cases in which distinguished men are insisting that they should be permitted to become active members of county or district or state associations even though they are not licensed to practice in those particular political units.

DR. D. L. CANNON, Alabama: I wish Dr. West would make reference to the status of membership of medical officers in the Army and the Navy. Particularly I have reference to one who may have retired from the service and located in a state.

DR. WEST: Medical officers in the Army and Navy, as long as they are on active duty or if they have been retired because of physical disability or after long and honorable service, or if they are appointed as Surgeon Generals of the Army, Navy or Public Health Service, are officially recorded as Fellows of the American Medical Association. That is provided for in the Constitution and By-Laws. In most instances retired medical officers of the Army Medical Corps and the Medical Corps of the Navy and the United States Public Health Service either rest with their status as Fellows of the American Medical Association or they seek full membership in the county societies and the state associations in the territory in which they reside.

DR. CANNON: By licensure?

DR. WEST: They cannot get in if they are not licensed, except that some states have provided they can be accepted as members. There are one or two states, maybe more than one or two, that permit these men to be recorded as members.

DR. W. F. DONALDSON, Pennsylvania: They provide that by their by-laws.

STATE MEDICAL LEGISLATION

RHODE ISLAND

Bill Introduced.—S. 7 proposes to require applicants for licenses to practice any form of the healing art, as a condition precedent to their right to be examined and licensed by their respective professional boards, to pass examinations in anatomy, physiology, pathology, symptomatology, chemistry, bacteriology

and public health to be given by a board of examiners in the basic sciences. The basic science board is to consist of three members selected by the director of health because of their knowledge of the basic sciences. One member of the board must be on the faculty of Brown University, one member on the faculty of Rhode Island State College and one on the faculty of Providence College.

WOMAN'S AUXILIARY

New Jersey

At a meeting of the auxiliary to the Burlington County Medical Society in Maple Shade, October 2, \$50 was donated to the parent-teacher association to be used in the purchase of resuscitators for the Burlington County Hospital, Mount Holly, and Zurbrugg Memorial Hospital, Riverside. The auxiliary is also paying the expenses of a nurse in training at the Pennsylvania Hospital, Philadelphia.

New York

Dr. Lucy M. Cobb, of Utica, lectured on "This Business of Living" at Watertown October 19, under the auspices of the Woman's Auxiliary to the Jefferson County Medical Society.

At the November meeting of the auxiliary to the Medical Society of the County of Kings Miss Caroline Hood, of Rockefeller Center, gave an illustrated lecture on "Life Behind the Scenes at the Center."

The auxiliary to the Medical Society of Nassau County met in October in conjunction with the Nassau County Cancer Control Committee. Speakers were Drs. Arthur Martin, Earle G. Brown, John M. Swan, Richard Derby, Louis C. Kress and Norman Treves. The March of Time film on cancer control was shown. More than 150 women attended the meeting.

At the autumn meeting of the auxiliary to the Medical Society of Rensselaer County in Troy Dr. Eugene F. Connally spoke on "Methods Used in Diagnosis and Treatment of Cancer." Sergeant Russell of the state police spoke on "Finger Printing and Its Relation to Crime" at the October meeting of the auxiliary to the Schenectady County Medical Society in Schenectady.

South Carolina

Mrs. W. B. Furman, president of the auxiliary to the South Carolina Medical Association, Mrs. R. P. Jeanes, corresponding secretary, and Mrs. J. W. Kitchen, president of the auxiliary to the Pickens County Medical Society, were speakers at a recent meeting of the auxiliary to the Laurens County Medical Society in Laurens.

The auxiliary to the Abbeville County Medical Society will assist in the work of the County Health Unit during the coming year.

Miss Belle Buller, public health nurse at Pacolet Mills, spoke on "The Program of Health Work at Pacolet" at a recent meeting of the auxiliary to the Spartanburg County Medical Society in Pacolet.

Tennessee

The auxiliary to the Nashville Academy of Medicine and Davidson County Medical Society held its annual membership tea in Nashville December 3. More than 150 women were present.

At a recent meeting of the auxiliary to the Rutherford County Medical Society in Rutherford, Dr. John Cason spoke on "Value of Pneumothorax in the Control and Treatment of Tuberculosis."

The November meeting of the auxiliary to the Memphis and Shelby County Medical Society was held at the University Center in Memphis. Mrs. Henry G. Hill spoke on the old time doctor.

Washington

Special guests at the meeting of the auxiliary to the Yakima County Medical Society in Yakima October 10 were wives of new members of the county medical society. A program of vacation travel talks by members was presented. On November 13 Mrs. D. F. Bice, president, entertained the auxiliary with a program of music and a travelogue on Hawaii.

The auxiliary to the Pierce County Medical Society welcomed twenty-three new members in Tacoma October 12. Thirty-three new subscriptions to *Hygiea* were announced at this meeting.

The auxiliary to the Kitsap County Medical Society met at Ferndale November 6. Articles from *Hygiea* were reviewed. The wife of every member of the Kitsap County Medical Society is a member of the auxiliary.

Mrs. Luman S. Roach, president of the auxiliary to the Washington State Medical Association, was speaker at a meeting of the auxiliary to the Clark County Medical Society at the home of Mrs. Charles Otto, near Vancouver, November 7. A joint meeting of the auxiliary and the Medical Society was held at the home of Dr. and Mrs. Otto December 5.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Society News.—At a meeting of the Los Angeles Society of Ophthalmology and Otolaryngology December 18 Drs. Isaac H. Jones and William T. Grant spoke on "The Elsberg Precision Measurements of the Sense of Smell."—The Trudeau Society, Los Angeles, was addressed December 26 by Drs. John H. Urabec on "Hematogenous Pulmonary Tuberculosis" and Joseph LeRoi Robinson and William Dunn, "Detection of Tubercle Bacilli by Gastric Aspiration."—At a meeting of the San Mateo County Medical Society in San Mateo November 29 Drs. Grant L. Selfridge spoke on "Nutritional Factors in Relation to the Eighth Nerve" and Jesse L. Carr, San Francisco, "Recent Advances in the Study of Vitamins."

Court Orders License Restored.—Superior Judge Emmet H. Wilson has ordered that a writ be issued compelling the board of medical examiners to restore to Dr. Harry W. Boyd, Los Angeles, his license to practice medicine, which was revoked by the state board of medical examiners in 1939. The judge held that a license to practice a profession is a valuable property right which cannot be revoked except on competent evidence. The opinion pointed out that the only evidence offered against Dr. Boyd before the board of medical examiners consisted of hearsay, conclusions of witnesses and other evidence which would not be admissible in court, according to the Los Angeles Journal. The license had been revoked for aiding and abetting and use of a fictitious name, both in connection with the so-called Samaritan Treatment for Alcoholism, Los Angeles branch. Dr. Boyd graduated at the University of Pennsylvania School of Medicine, Philadelphia, in 1899 and was licensed to practice in California in 1922.

COLORADO

Society News.—Charles E. Willburn, D.D.S., La Veta, discussed "Children's Dentistry in Relation to Health" before the San Luis Valley Medical Society November 21.—At a meeting of the Colorado Neurological Society, Denver, December 16 Dr. Roland M. Klemme, St. Louis, spoke on "Surgical Treatment of Paralysis Agitans, Athetosis and Dystonia."

CONNECTICUT

Changes in Health Officers.—Dr. George S. Lambert, Danielson, has been appointed health officer of Brooklyn. Dr. Julian G. Ely, Old Lyme, has been named health officer of Salem and Dr. Arthur D. Marsh, Hampton, of Chaplin. Dr. William V. Wener, Norwich, has been appointed health officer of Bozrah. Dr. Francis H. Burke, Rockville, has been appointed health officer of Tolland.

Coppola Fined.—Modestino Coppola was recently sentenced to pay a fine of \$100 and costs in the superior court for New Haven County for practicing medicine illegally. He was also given a suspended jail sentence of one year. Coppola's license to practice medicine in Connecticut had been revoked by the state department of health Dec. 4, 1923, during the diploma mill investigations by the special grand jury, according to the Connecticut Health Bulletin.

DISTRICT OF COLUMBIA

A Larger Morgue for Washington.—Dedicatory ceremonies November 21 marked the completion of a new \$100,000 building on the grounds of Gallinger Hospital to house Washington's new morgue. In an address, Dr. Andrew Magruder MacDonald, coroner, outlined the activities of the coroner's office and showed the increase in the work from the time the unit was established in 1868. In this year the city had six suicides, seven murders, 136 accidents, 507 deaths, twenty-two inquests and twenty-six autopsies. In 1939 there were 143 suicides, seventy-six homicides, 437 accidents, 2,557 deaths, 140 inquests and 368 autopsies.

Society News.—Dr. Francis H. Adler, Philadelphia, addressed the Washington Ophthalmological Society January 8 and Dr. LeRoy W. Hyde presented a case report on "Vitamin A Deficiency."—A general practitioner's forum will be

presented before the Georgetown Clinical Society January 16 by Drs. Warren B. Burch, John V. Dolan, Richard J. McNulty and Ernest H. Aschenbach.—The Georgetown University Alumni Club was organized as a new society recently in Copley Hall at the university; Dr. Leo B. Norris was chosen president; Dr. Aloysius J. B. Connolly, vice president, and Dr. Harry F. Davies, secretary.—Dr. Edith Weigert-Vowinkel discussed "Psychoanalytic Notes on Sleep and Convulsion Treatment in Functional Psychoses" before the Washington-Baltimore Psychoanalytic Society December 9.—Dr. Katherine Elizabeth Parker addressed the Women's Medical Society of the District of Columbia December 5 on "Recent Advances in Endocrinology."—A symposium on the surgical abdomen will be presented before the Medical Society of the District of Columbia January 24 by Drs. Matthew White Perry, Edward A. Cafritz and James A. Cahill Jr. Among others, Dr. Edward M. Pickford will present an illustrated lecture before the society January 17 on carcinoma of the uterine cervix with skin metastases.—Dr. Walter E. Dandy, Baltimore, addressed the George Washington University Medical Society December 16 on "Tic Douloureux."

FLORIDA

New Director of Maternal and Child Health.—Dr. William H. Ball, Panama City, director of the Bay County health unit, has been appointed state director of maternal and child health with headquarters in Jacksonville, newspapers reported. He will be succeeded in Bay County by Dr. Dea C. Witt, Jacksonville, who was transferred from the Ocala health unit.

Public Health Meeting.—Dr. Albert B. McCreary, state health officer, was elected president of the Florida Public Health Association at its eleventh annual convention in Jacksonville December 10. Other officers are Dr. Leander J. Graves, Tallahassee, and A. C. Newman, Jacksonville, vice presidents, and Dr. Edward M. L'Engle, Jacksonville, secretary-treasurer.

ILLINOIS

Past Presidents Honored.—The past presidents of the Peoria City Medical Society were entertained at the second annual dinner given in their honor at the Hotel Pere Marquette November 21. There are about twenty-five past presidents now living. Dr. Irving S. Cutter, dean, Northwestern University Medical School, Chicago, spoke on "Some Literary Physicians."

Personal.—Dr. Walter H. Baer, superintendent of the Peoria State Hospital, has been appointed acting superintendent at the Manteno State Hospital, Manteno, succeeding Dr. Ralph T. Hinton, it is reported.—Dr. Alonzo H. Hall, Niantic, recently was presented with a gold emblem by the state medical society, signifying the completion of fifty years in the practice of medicine.—Dr. Joseph T. Maher, formerly of Koch, Mo., has been appointed medical director of the Madison County Tuberculosis Sanitarium, Edwardsville, following the resignation of Dr. Oscar C. Heyer, who held the position for more than four years.

Chicago

Dr. Goldwater to Address Hospital Council.—Dr. Sigismund S. Goldwater, commissioner, department of hospitals of New York City, will address the fourth anniversary dinner of the Chicago Hospital Council at the Blackstone Hotel January 15. His subject will be "Do American Cities Need Both Voluntary and Tax-Supported Hospitals?"

Dr. Blair to Lecture on Facial Injuries.—Dr. Vilray P. Blair, professor of clinical surgery, Washington University School of Medicine, St. Louis, will address the Chicago Medical Society January 17 at the Chicago Woman's Club. His subject will be "Treatment of Facial Deformities Due to Trauma." A symposium on industrial medicine and traumatic surgery constitutes the clinical session at St. Luke's Hospital during the day.

Society News.—The Chicago Council of Medical Women was addressed January 10, among others, by Dr. Victoire D. Lepinasse on "Urinary Tract Changes in Pregnancy."—The Chicago Society of Allergy will be addressed January 15 by Drs. French K. Hansel, St. Louis, and Milton B. Cohen, Cleveland, on "Allergy of the Nose and Paranasal Sinuses from the Standpoint of the Otolaryngologist and the Allergist" and "Metabolic Aspects of Allergy" respectively.—At a meeting of the Chicago Pediatric Society January 16 Dr. Katsuji Kato will speak on "The Prothrombin in the Blood of

Newly Born Mature and Immature Infants as Determined by the Micropothrombin Test" and Dr. Eugene T. McEnery and Mrs. Frances Perowski Gaines on "Tongue-Tie in Infants and Children."

Forum on Allergy.—The second annual Midwestern Forum on Allergy will be held January 13-14 at the Palmer House. Among the speakers will be the following:

- O. C. Durham, North Chicago, Results of Atmospheric Research During 1938-1939.
- Dr. Theron G. Randolph, Milwaukee, Studies in Mold Allergy.
- Dr. Frederick W. Wittich, Minneapolis, The Nature of Various Mill Dust Allergens.
- Drs. John Warrick Thomas and John R. Forsythe, Cleveland, Allergic Purpura.
- Dr. Clarence Bernstein, Chicago, Comments on Differential Diagnosis and Management of Cardiac and Bronchial Asthma.
- Dr. Mary E. H. Loveless, New York, Changes in the Serum and Skin of the Allergic Patient During Specific Therapy.
- Dr. Ethan Allan Brown, Boston, New Method of Medication for Allergic Complaints.
- Dr. Paul R. Cannon, Chicago, The Mechanism of the Arthus Reaction and Its Relationship to Allergic Inflammation.
- Dr. Richard H. Young and Mr. Robert P. Gilbert, Use of Aminophyllin to Control Bronchial Spasm Induced by Histamine.
- Dr. Michael Zeller, Chicago, Passive Transfer Studies in Neurologic Conditions.

INDIANA

Society News.—The Fort Wayne County Medical Society was addressed December 5 by Dr. Charles E. Galloway, Evanston, Ill., on "The Clinical Management of Toxemias of Pregnancy."—At a meeting of the Academy of Medicine and Surgery, Fort Wayne, December 12, Dr. Alan R. Chambers spoke on "Medicine and English Men of Literature."

New State Board of Health Building.—The Indiana State Board of Health now occupies a building at 1098 West Michigan Street, Indianapolis, on the campus of the Indiana University Medical Center. The T shaped building is four stories high. The stem of the T contains the auditorium, which seats about 1,000 persons and which has been named Hurty Hall in honor of the late Dr. John N. Hurty, a pioneer in public health work, who served as secretary of the board from 1896 until 1922. Two metal plaques at the entrance of the hall have been dedicated to Dr. Hurty. The building is of light buff brick trimmed with Indiana limestone, while the walls inside are of hollow tile. The executive offices are located at the west end of the second floor; most of the laboratories will be on the top floor. It is planned to dedicate the auditorium this year during the meeting of the Conference of State and Provincial Health Officers, of which Dr. Hurty was once president. The old home of the state board of health was at 102 North Senate Street. The building has an interesting medical history. It served as the Medical College of Indiana from 1895 to 1905, when it became the medical department of Purdue University. From 1908 until 1919 it served as the Indiana University School of Medicine and later, when the school was moved to the present site, it was used as the city dispensary. In 1927 the unit was sold by the state to the state university, and the state board of health moved into the first two floors.

IOWA

Personal.—Dr. and Mrs. James F. Clarke, Fairfield, were guests of honor at a banquet November 7 to observe the completion of fifty years in the practice of medicine by Dr. Clarke. Dr. Harold E. Graber was toastmaster.

Series of Pneumonia Meetings.—The state department of health sponsored a series of meetings in the central and western parts of Iowa in November and in the eastern half of the state during December. The meetings were in cooperation with the officers and members of the county medical societies. The moving picture "Management of the Pneumonias" was exhibited. It was prepared under the direction of Dr. Jesse G. M. Bullowa, clinical professor of medicine, New York University College of Medicine, New York, and was shown at the Iowa meetings by Dr. Florian E. Schmidt, Chicago.

KANSAS

Personal.—Drs. Henry G. Hurtig and Fred H. Rhoades were guests of honor at a dinner meeting of the Washington County Medical Society November 14 in celebration of their combined fifty years of practice in Hanover.

Society News.—The Shawnee County Medical Society devoted its meeting January 8 to a panel discussion on socialized medicine with the following speakers: Mr. Clarence G. Munns, Drs. Robert B. Stewart, Douglass W. Orr and For-

rest L. Loveland, Topeka.—At a meeting of the Golden Belt Medical Society, Salina, January 4, the speakers were Drs. Severt A. Anderson, Clay Center, on "A Case of Asthma Treated with Sulfapyridine"; Henry H. Turner, Oklahoma City, "Endocrinology in General Practice"; Wade H. Miller, Kansas City, Mo., "Aviation Medicine," and Robert H. Peckham, Ph.D., Hanover, N. H., "Aniseikonin." Dr. Arthur E. Hertzler, Halstead, was the dinner speaker.

MARYLAND

Society News.—The speakers before the Baltimore City Medical Society January 19 will include Drs. Henry M. Thomas Jr. on "Symptomatic Treatment of Hypertension" and Caroline C. B. Thomas on "Potassium Thiocyanate in Treatment of Hypertension."

Seminars on Industrial Health.—The committee on industrial health of the Medical and Chirurgical Faculty of Maryland is sponsoring a series of seminars on industrial health. Speakers at current sessions include:

- Dr. Royd R. Sayers, Washington, D. C., January 9, Carbon Monoxide as an Industrial Hazard.
- Dr. Clarence D. Selby, Detroit, January 23, Medical Service in Industry.
- Dr. Hans W. Lawrence, Cleveland, February 6, Personnel Management—Medical Service Relationships.
- Dr. Anthony J. Lanza, New York, February 20, The Dust Hazard in Industry.
- Dr. Huntington Williams, Baltimore, March 5, Public Health Administrator's Viewpoint on Industrial Health.
- Manfred Bowditch, Boston, March 12, The Chemical Aspects of Occupational Hazards and Their Control.
- William B. Kouwenhoven, Baltimore, March 26, Electrical Aspects of Occupational Hazards and Their Control.

MASSACHUSETTS

Fellowship in Pathology.—A research fellowship in the laboratory of pathology at the Collis P. Huntington Memorial Hospital and in the department of pathology at the Harvard Medical School will be available September 1. According to *Science*, it carries a stipend of \$3,000 and may be renewed for a second year. The fellow will be expected to devote most of his time to histologic and cytologic studies of the effects of radiation of different types on normal and pathologic tissue. Application should be addressed to Dr. Shields Warren at the Collis P. Huntington Memorial Hospital, Boston.

Society News.—At a meeting of the Harvard Medical Society in Boston December 12 A. Baird Hastings, Ph.D., Cambridge, discussed "Tissue Electrolytes."—The New England Heart Association was addressed in Boston December 18 among others by Drs. Richard V. Ebert on "The Hemodynamic Effects of the Application of Tourniquets"; Francis F. Rosenbaum, "The Value of Electrocardiography in the Prognosis of Coronary Thrombosis," and Paul B. Beeson and Samuel A. Levine, "Sulfanilamide and Heparin in the Treatment of Subacute Bacterial Endocarditis."—Included among the speakers before the New England Roentgen Ray Society, Boston, December 15 were Drs. Charles G. Mixer, Boston, on "The Value of Cholangiography During Operation" and William S. Altman, Quincy, "Changes in the Uterus Following Roentgen Therapy; Demonstrated by Uterography."

MICHIGAN

Changes in State Health Department.—Dr. Edwin L. McQuade, formerly director of rural health in the Virginia State Department of Health, has been appointed a member of the bureau of epidemiology of the state department of health; he will direct the program for the detection and control of typhoid carriers. Amalia E. Lautz, Ph.D., assistant professor of home economics, Butler University, Indianapolis, has been placed in charge of the newly organized nutrition division of the state department of health; the division will function under the bureau of maternal and child health.

Society News.—Dr. Clarence A. Mills, Cincinnati, addressed the Wayne County Medical Society, Detroit, December 18, on "Climatic and Weather Influences on Health and Disease."—Dr. Rush McNair, Kalamazoo, addressed the sixty-fifth annual meeting of the Michigan State Historical Society recently, among others, on "Medical Practice in Horse and Buggy Days."—Henry F. Vaughan, Dr. P.H., health commissioner of Detroit, was elected president of the Michigan Public Health Association at its twentieth annual meeting in Grand Rapids November 9. The 1940 session will be held with the annual meeting of the American Public Health Association in Detroit in October.—Jack D. Laux, B.S., director of the medical service plan for the Michigan State Medical Society, Lansing, discussed group medical service before the Washtenaw

County Medical Society in Ann Arbor December 12.—Dr. Gordon B. Myers, Detroit, discussed "Treatment of Diabetes Mellitus" before the Ingham County Medical Society, Lansing, November 21.

MINNESOTA

Society News.—At a meeting of the Minneapolis Surgical Society December 7 the speakers were Drs. Lucius H. Fowler and William A. H. Hanson on "Gastric Jejunal Ulcer Following Gastro-Enterostomy for Pyloric Stenosis"; Ralph Emerson Weible, Fargo, N. D., "Leiomyosarcoma of the Small Intestine," and Arnold Schwyzer, St. Paul, "Congenital Cysts and Fistula of the Neck."—The Hennepin County Medical Society devoted its meeting December 27 to a discussion of drugs used in cardiac therapy; the speakers were Harold N. G. Wright, Ph.D., on pharmacology; Drs. Henry L. Ulrich, internal medicine, and Max Seham, pediatrics. Dr. Hobart A. Reimann, Philadelphia, addressed the Hennepin County Medical Society and the staffs of the Swedish and Northwestern hospitals January 8 on "Newly Recognized Diseases of the Respiratory Tract."

Illegal Practitioners Sentenced.—Arthur N. Alexander pleaded guilty December 9 to an information charging him with the crime of abortion and was sentenced by Judge Arthur W. Selover of the district court of Hennepin county to a term not to exceed two years at hard labor in the state prison at Stillwater. In 1935 Alexander's license to practice chiropody in the state was revoked by the state board of chiropody examiners when he pleaded guilty to a charge of practicing healing without a basic science certificate. J. F. Brown, also known as William Brown, Ely, pleaded guilty to a charge of practicing healing without a basic science certificate and was sentenced to six months on the St. Louis County Work Farm. He was told that after he had served thirty days the court would suspend the remaining five months and place him on probation for one year on condition that he refrain from practicing healing in any way, shape or manner. Brown had been representing himself as a "rheumatism doctor" and had been giving various medications to patients, charging them for each treatment.

MISSISSIPPI

Public Health Meeting.—At a meeting of the Mississippi Public Health Association at the Robert E. Lee Hotel, Jackson, December 6-8, among other speakers were the following:

- Dr. Archie L. Gray, Jackson, Epidemiology in Local Health Service.
- Mr. Roy J. Morton, Nashville, Tenn., Correlation of Instruction in Sanitation with Public Health Practice.
- Dr. Reginald M. Atwater, New York, Teamwork—The Public Health Worker and His Professional Society.
- Dr. James L. Bowman, Montgomery, Ala., Health Education in the Schools.
- Harold H. Walker, Ph.D., Knoxville, Tenn., Health Plus Education Equals Health Education—Factors in the Failure or Fulfillment of a Formula.
- Dr. James S. McLester, Birmingham, Public Health Nutritional Problems in the School Child.
- Dr. William D. Smith, Senatobia, How a Part Time Health Officer Can Foster and Facilitate the Establishment of Permanent Health Work.
- Dr. Knox E. Miller, Washington, D. C., Inherent Harm to Public Health in Erroneous Advertising.
- Dr. Frances C. Rothert, New Orleans, Our Problem—Maternal Health, and How It Will Be Met.

NEBRASKA

Society News.—Drs. Maurice E. Grier and Ralph H. Luikart, Omaha, addressed the Madison Six County Medical Society in Norfolk December 12 on "Placenta Praevia" and "Indications for Version and Forceps" respectively.—At a meeting of the Tri-County Medical Society in Tekamah November 27 the speakers were Drs. Clayton F. Andrews, Lincoln, "Industrial Accidents and Compensation Laws"; Morris Nielsen, Blair, "Hypertension," and Walter W. Carveth, Lincoln, "Treatment of Varicose Veins."—The Five County Medical Society met December 5 in Wayne with the following speakers: Drs. John W. Schwartz and Thomas R. Gittins, Sioux City, Iowa, on cancer of the cervix and acute conditions in the chest from the bronchoscopic standpoint, respectively.

NEW YORK

Medal Offered for Ophthalmologic Work.—Dr. Harold W. Cowper, Buffalo, directs attention to the gold medal awarded annually by the University of Buffalo for work in an ophthalmologic subject. For details write to Dr. Cowper, 543 Franklin Street, Buffalo.

Nutrition Forum on Farm and Home Week Program.—The New York State College of Home Economics at Cornell University, Ithaca, announces a "Nutrition Forum" as

part of its annual Farm and Home Week February 12-17. The nutrition program will be given Wednesday afternoon February 14. The speakers will be:

- Helen S. Mitchell, Ph.D., Massachusetts State College, Amherst, Protein and Calory Needs.
- Leonard A. Maynard, Ph.D., New York State College of Agriculture, Ithaca, Mineral Metabolism.
- Leo C. Norris, Ph.D., New York State College of Agriculture, Ithaca, Vitamin Metabolism.
- Clive M. McCay, Ph.D., New York State College of Agriculture, Ithaca, Adult Nutrition and Longevity.
- Helen Mensch, M.A., New York State College of Home Economics, Ithaca, Child Nutrition and Family Feeding.
- Dr. William H. Sebrell Jr., U. S. Public Health Service, Washington, D. C., Summary and Conclusions.

New York City

Fourth Harvey Lecture.—Leslie C. Dunn, Sc.D., professor of zoology, Columbia University, will deliver the fourth Harvey Society Lecture of the current series at the New York Academy of Medicine January 18. His subject will be "Heredity and the Development of Early Abnormalities in Vertebrates."

Award to Howard Blakeslee.—Howard W. Blakeslee, science editor of the Associated Press, is to receive the Wilson L. Fairbanks Award of the American College Publicity Association for 1939, the *New York Times* reported December 31. The award is made annually to the person who has done most during the year for the cause of education in the news. Mr. Blakeslee will receive the award at a meeting of the association January 20.

Personal.—Dr. John J. Moorhead was honored with a testimonial dinner December 18 in recognition of his work as chairman of the committee on publicity of the New York Academy of Medicine. The dinner was attended by members of the Academy and representatives of the press.—Dr. James B. Murphy recently received the decoration of "Officer of the Order of Leopold" of Belgium. The honor was conferred by the King of the Belgians in recognition of Dr. Murphy's cancer research, according to *Science*.

Society News.—The Bronx County Medical Society held an economic meeting December 20 with Nathan Sinai, Ph.D., Ann Arbor, Mich., and Dr. Frederic E. Elliott as the speakers on "The Medical Economic Scene" and "Medical Expense Indemnity" respectively.—Drs. William E. Hoves and Samuel G. Schenck presented a paper on "Roentgenologic Considerations in Primary Malignant Bone Tumors" and Dr. Ralph E. Herendeen a paper on "Roentgen Diagnosis of Giant Cell Tumors of Bone" at a meeting of the Long Island Radiological Society November 30.—A symposium on "Bronchopulmonary Fistula" was presented at the clinical session on chronic pulmonary diseases of the Tuberculosis Sanatorium Conference of Metropolitan New York December 20. The speakers were Drs. George C. Cole, Milton S. Lloyd, Daikichi Matsuzawa, George G. Ornstein and David Ulmar.

NORTH CAROLINA

District Meeting.—The Seventh District Medical Society met in Rutherfordton November 28 with the following speakers, among others, at an afternoon session: Drs. Walter E. Daniel, Charlotte, on "Principles of Chemotherapy in Gonorrhea"; Harold C. Whims, Rutherfordton, "Syphilis of the Cardiovascular System," and Brodie C. Nalle, Charlotte, "Dystocia of Soft Parts." Dr. Paul H. Ringer, Asheville, addressed a banquet session on "Present Status of Tuberculosis Situation in Southern States."

State Pathologists Meet.—The annual meeting of the North Carolina Pathological Society was held in Winston-Salem December 12. The speakers included Drs. Wiley D. Forbus, Durham, on "Relation Between Hodgkin's Disease and Brucellosis," and Russell Holman, Chapel Hill, "Regeneration of Tissue Proteins." Dr. Lester C. Todd, Charlotte, was elected president. In the evening the society met with the Forsyth County Medical Society, with Dr. Kenneth M. Lynch, Charleston, S. C., as the speaker on pancreatitis.

OKLAHOMA

Personal.—Dr. David W. Gillick, superintendent and physician in charge of the Shawnee Indian Sanatorium, Shawnee, has been appointed medical director for district No. 5 of the Indian Medical Service, succeeding the late Dr. Walter S. Stevens. Dr. Ralph M. Alley, Pine Ridge, S. D., has succeeded Dr. Gillick.

Society News.—At a meeting of the Southern Oklahoma Medical Association in Ardmore December 5 the speakers included Drs. Arthur J. Schwenkenberg, Dallas, Texas, on "Recent Developments in Psychiatric Treatment"; George L.

Carlisle, Dallas, "Interpretation of Heart Murmurs," and John L. Holland, Madill, "Relation of the Medical Profession to the Public."—At a meeting of the Woods County Medical Society November 27 the speakers, all of Oklahoma City, were Drs. Curt O. von Wedel, "Role of Plastic Surgery in Injuries of the Face"; Paul C. Colonna, "Acute Osteomyelitis," and Robert L. Noell, "Fractures of the Elbow Joint."

PENNSYLVANIA

Society News.—Dr. John J. Shaw, state secretary of health, addressed the Washington County Medical Society, Washington, January 9 on "Medical Program of the State of Pennsylvania" and Dr. Milton I. Rose, Philadelphia, on "Present Day Trends of Public Health in the United States" respectively. Dr. Howard A. Power, Pittsburgh, addressed the society December 13 on "Complications of Labor."—Dr. Walter I. Buchert, Danville, addressed the Centre County Medical Society in Bellefonte December 14 on phases of urology of interest to the general practitioner.

Philadelphia

Gifts to Aid University Research.—Grants amounting to \$132,559 for scientific research have been made to the University of Pennsylvania recently as part of the fund being raised by the university in connection with its bicentennial celebration. The bicentennial activities begin January 17 with a Founder's Day program commemorating the birth of Benjamin Franklin, who founded the university, and will continue with various events until September. Among the gifts announced are:

Commonwealth Fund, \$27,255 for streptococcus research, kidney research and study of air-borne infections.

Rockefeller Foundation, \$12,650 for industrial research and other medical studies.

Smith, Kline & French Laboratories, \$19,956 for physiologic chemistry, diabetes, dermatology and gastrointestinal research.

Estate of George S. Cox, \$6,250 for research in diabetes.

National Tuberculosis Association, \$5,971 for study of the chemistry of the tubercle bacillus and research on x-ray technic.

National Committee on Mental Hygiene, \$2,500 for research in dementia praecox.

Nemours Foundation, \$2,400 for a fellowship in pediatrics.

International Cancer Research Foundation, \$1,415 for study of malignant tumors in frogs and x-ray therapy in larger animals.

Parke, Davis & Co., \$3,000 for research on pituitary hormones.

Abbott Laboratories, \$2,500.

Merck & Co., Inc., \$2,000.

RHODE ISLAND

Hospital News.—Dr. Lawrence W. Smith, Philadelphia, gave a lecture at Memorial Hospital, Pawtucket, December 13 on "Reduced Temperature as an Adjunct in Cancer Therapy."—A new auditorium at the Rhode Island State Hospital for Mental Diseases, Howard, was dedicated recently to Dr. Arthur H. Harrington, superintendent of the hospital from 1907 to 1926 and now living in Providence. Dr. John E. Donley, Providence, made the dedicatory address and formally named the building the Arthur H. Harrington Assembly House.

GENERAL

Award for Endocrinology Established.—E. R. Squibb & Sons have established an annual award of \$1,000 to encourage investigation in endocrinology, *Science* reports. The award will be made by the Association for the Study of Internal Secretions. Nominations for the 1940 award must be received before March 1 by the secretary of the association, Dr. Eberle Kost Shelton, 921 Westwood Boulevard, Los Angeles.

Midwestern Meeting of Ear, Nose and Throat Specialists.—The middle section of the American Laryngological, Rhinological and Otological Society will hold its annual meeting in Kansas City, Mo., January 19 at the Hotel Muehlebach. A symposium on the surgery of deafness will be presented by Drs. Walter Hughson, Philadelphia; Norton Canfield, New Haven, Conn., and Otto Jason Dixon, Kansas City, Mo. Among other speakers will be:

Dr. Andrew Eggston, New York, Cancer of the Larynx from the Pathologist's Point of View.

Dr. Frederick A. Figi, Rochester, Minn., Treatment of Chronic Stenosis of the Larynx.

Dr. Thomas E. Carmody, Denver, Management of Sinus Infections of Dental Origin.

White House Conference on Children.—The White House Conference on Children in a Democracy will be held in Washington January 18-20 under the sponsorship of President Roosevelt. Both the President and Mrs. Roosevelt will make addresses. Subjects on which group discussion meetings will be held are: health and medical care, education through

the schools, democracy as it concerns the family, economic resources of families and communities, housing, economic aid, social services, children in minority groups, religion, child labor and youth employment, play and recreation. The Secretary of Labor, Miss Frances Perkins, will be chairman of the conference; Miss Katharine F. Lenroot, chief of the U. S. Children's Bureau, is executive secretary. The conference was organized in April 1939.

Society News.—Dr. William H. Woolston, Albuquerque, N. M., was chosen president-elect of the Southwestern Medical Association at the annual meeting in El Paso, Texas, November 9-11, and Dr. Orville E. Egbert, El Paso, was installed as president. Drs. Charles A. Thomas, Tucson, Ariz., and Kevin D. Lynch, El Paso, were elected vice presidents and Dr. Maurice P. S. Spearman, El Paso, was reelected secretary. The 1940 meeting will be in Tucson.—The seventeenth annual meeting of the American Orthopsychiatric Association will be held at the Hotel Statler, Boston, February 22-24; Dr. Norville C. LaMar, 149 East Seventy-Third Street, New York, is secretary.—The Women's Field Army of the American Society for the Control of Cancer will hold its second national assembly at the Brown Hotel, Louisville, Ky., February 14-16.

Conference on Medical Service.—The fourteenth annual meeting of the National Conference on Medical Service, formerly the Northwest Regional Conference, will be held at the Palmer House, Chicago, Sunday February 11. Among the speakers will be Drs. Roscoe L. Sensesich, South Bend, Ind.; Carl F. Vohs, St. Louis; Henry R. Carstens, Detroit; George H. Kress, San Francisco; Hilton S. Read, Atlantic City, N. J.; Charles H. Phifer, Chicago; Creighton Barker, New Haven, Conn.; Ernest E. Shaw, Indianola, Iowa, and Ralph C. Williams, Washington, D. C.; Mr. Paul G. Hoffman, president of the Studebaker Corporation, South Bend, and Mr. David H. McAlpin Pyle, of the United Hospital Fund, New York. Dr. Rosco G. Leland, Director, Bureau of Medical Economics, American Medical Association, Chicago, will present "Allocation of Federal Funds to States" and Drs. Morris Fishbein, Editor of THE JOURNAL, Chicago, and Edward J. McCormick, Toledo, Ohio, will discuss "Effective Public Relations."

Fellowship Available for Research.—The Society of the New York Hospital announces that a fellowship for research in medicine and surgery or in any closely allied field has been established by Mrs. Ruth E. Ledyard, wife of the late Lewis Cass Ledyard Jr., a governor of the hospital. The income amounts to about \$4,000 annually, \$3,000 to be used as a stipend and approximately \$1,000 for supplies or expenses of the research. Preference will be given to younger applicants who are graduates in medicine and who have demonstrated fitness to carry on research of high order. The recipient will be required to submit reports of his work, and when the result of his work is published he will be expected to give credit to the fellowship. The work is to be carried on at the New York Hospital and Cornell University Medical College. The fellowship will be available July 1 and applications should be in the hands of the committee by February 15. Applications should be addressed to The Committee of the Lewis Cass Ledyard Jr. Fellowship, The Society of the New York Hospital, 525 East Sixty-Eighth Street, New York.

Academy of Orthopaedic Surgeons.—The eighth annual convention of the American Academy of Orthopaedic Surgeons will be held at the Hotel Statler, Boston, January 21-25, under the presidency of Dr. George E. Bennett, Baltimore. A clinical session will open the meeting Monday morning and the scientific session will begin Tuesday morning with a symposium on the treatment of tuberculosis of the spine. Among the speakers will be:

Dr. Edwin D. Weinberg, Baltimore, Syphilitic Lesions of Bones and Joints.

Drs. William B. Carrell and Harold M. Childress, Dallas, Texas, Tuberculosis of the Large Long Bones of the Extremities.

Dr. Royal S. Haynes, New York, Attainment of Good Posture by Use of Natural Reflex Mechanisms.

Dr. Albert B. Ferguson, New York, Treatment of Osteogenic Sarcoma.

Dr. Raymond E. Lenhard, Baltimore, The Conservative Treatment of Poliomyelitis with Paralysis.

Dr. Joseph Warren White, Greenville, N. C., Correction of Congenital Flat Foot by Astragalar Shortening.

Drs. Guy W. Leadbetter and Frank M. Hand, Washington, D. C., Restoration of Function in Fractures of the Tibial Plateau Complicated by Injuries of the Semilunar Cartilages.

Drs. Edward L. Compere and John H. Lee, Chicago, The Restoration of Physiologic and Anatomic Function in Old Ununited Fractures of the Neck of the Femur (Intracapsular); A Clinical and Experimental Study.

The annual banquet will be held Wednesday evening, when the presidential award and scientific awards will be presented.

Government Services

Appointments in Medical Corps of U. S. Naval Reserve

The surgeon general of the navy invites the attention of civilian physicians to the opportunity of becoming commissioned officers of the Medical Corps in the U. S. Naval Reserve. Male citizens of the United States, graduates of class A medical schools, who are under 50 years of age and who meet the physical and professional requirements, are eligible for appointment as commissioned officers in the medical corps of the naval reserve.

The naval reserve was created as a component part of the navy by the Naval Reserve Act of 1938. It is composed of citizens of the United States and of the insular possessions who, by appointment or enlistment therein or by transfer or assignment thereto, obligate themselves to serve in the navy in time of war or during the existence of a national emergency declared by the President.

Medical officers of the naval reserve are appointed in one of the following classifications: "Organized Reserve," "Volunteer, General Service Class," "Volunteer, Special Service Class" and "Merchant Marine Reserve." Appointments are made in the organized reserve on presentation of satisfactory credentials, which may be accepted in lieu of professional examinations as assistant surgeons with the rank of lieutenant (junior grade), between the ages of 21 to 32. The organized reserve consists of officers and men required to perform annual training and other duties and who shall be available for immediate mobilization. The volunteer, general service class is required to meet the same professional and physical requirements as members of the organized reserve. Members of this class are not required to attend drills or perform training duty but may request this duty with or without pay, depending on the availability of funds for this specific purpose. Appointments are made in the volunteer, special service class on the presentation of satisfactory credentials, which may be accepted as qualifying the candidate for appointment without a professional examination. The grade and rank for appointment in this class is determined by the candidate's age, professional standing and academic seniority. Applicants who are less than 31 years of age may apply for the rank of lieutenant (junior grade), those less than 37 years of age for the rank of lieutenant and those between the ages of 37 and 50 for the rank of lieutenant commander. Members of this class are not required to attend drills or perform training duty but may request this duty, with or without pay, depending on the availability of funds for this specific purpose.

The purpose of the organized reserve is to provide a trained force of officers and men which, added to qualified personnel from other sources, will be adequate in numbers and composition to complete the organization of the United States fleet.

The purpose of the volunteer reserve is to provide a force of qualified officers and men in numbers which, added to the officers and men in other branches of the reserve, will be adequate to fulfil the purpose of the naval reserve. The volunteer, general service officers may be associated with organizations of the organized reserve for training purposes and may be transferred to the organized reserve to fill vacancies in divisions, battalions or squadrons. The volunteer, special service class is composed of specialists, qualified by their professional experience and attainments, for appointment in one of the various special service classifications.

Medical officers of the merchant marine may apply for appointments as officers in the medical corps of the merchant marine reserve. The requirements for appointment in this class are the same as those for volunteer, special service. As far as is practicable, it is contemplated that officers and men of the merchant marine reserve will be assigned to duty on their own vessels.

Physicians desiring appointments as commissioned officers in the medical corps of the naval reserve should communicate with the commandant of the naval district in which they reside, requesting application blanks and a "Circular for the Information of Persons Desiring Appointments as Officers in the United States Naval Reserve." This circular contains full information regarding classification, promotion, pay allowances etc. If the addresses of naval commandants are not known, they may be obtained by addressing a letter to the Surgeon General of the Navy, Navy Department, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 7, 1938.

The Preparedness of the Army Medical Service

At the outbreak of the last great war Britain had a small army and was unprepared for a catastrophe of such magnitude. We had a supreme navy, which was thought quite sufficient for the safety of the country. A medical example of our unpreparedness is furnished by the retreat from Mons, which occurred soon after the outbreak of hostilities. We had to allow many of our wounded to fall into the hands of the enemy because there were not enough motor ambulances to transport them. Now the position is different. The danger of this war has been foreseen. In the medical service, as in all other branches, the preparations are meticulously complete.

THE BLOOD TRANSFUSION SERVICE

Arrangements on a scale never before known in the world have been made for blood transfusion. Volunteers for blood donation have been enrolled all over the country, from whom "universal donors" have been selected. From them blood is regularly drawn and sent to central depots in refrigerating vans. Thence it is sent to France, where it is stored. Blood so treated can be used for fourteen days. After that period it is discarded. Each bottle is labeled so that, if necessary, it can be traced to the donor. In France small mobile units with refrigerating facilities are ready to transport the blood to any part of the country.

Relapse Following Sympathectomy of the Arm

The disappointing results following sympathectomy of the arm in the treatment of vascular disease of the hands contrast with the success of lumbar ganglionectomy. The cause of the recurrence of symptoms is one of the problems of vascular surgery. From the Department of Clinical Research in the Disorders of the Autonomic Nervous System of the Royal Infirmary, Manchester, Mr. H. T. Simmons and Dr. Donal Sheehan, now professor of anatomy at New York University College of Medicine, in collaboration with Mr. H. T. Simmons, report in the *British Journal of Surgery* (27:234 [Oct.] 1939) on the subject. Their material consists of thirty-eight cervicothoracic ganglionectomies done in 1931-1934 and twenty-nine preganglionic sections of the thoracic cord performed since February 1935. Immediately after sympathetic denervation, of whatever kind, the condition of the fingers always improved except when digital thrombosis or extreme sclerodactyly existed. But the resulting high temperature of the skin is not maintained and a steady decline occurs till a level is reached usually several degrees above the preoperative temperature. This decline of cutaneous temperature after sympathectomy occurs both in the hands and in the feet, even when the operation is performed for non-vascular disease, and presumably is due to resumption of a certain degree of tone in the blood vessels by virtue of their inherent muscular activity. The writers do not regard this decline as a relapse after sympathectomy, because it is an inevitable sequel, and the value of the operation lies in the residual permanent dilatation of vessels. They are concerned with reappearance of symptoms, which they found may be early (within a few weeks of operation) or late (not for several months). Both types of operation were liable to be followed by relapse, but it appeared earlier after preganglionic section than after ganglionectomy. Excluding cases of incomplete denervation, the early relapse was found to be due to a local fault in the digital vessels so severe as to be able to nullify the effect of sympathetic denervation. The late relapse, on the other hand, was accompanied by regeneration of vasoconstrictor fibers. The reappearance of these fibers was first observed when or shortly before clinical relapse.

became apparent. The symptoms became steadily worse and at the same time there was gradual increase in the degree of dilatation obtained by anesthetization of the ulnar nerve. It was therefore concluded that regeneration of vasoconstrictor nerve fibers was the cause of this late relapse after sympathectomy, but a progressive local fault in the digital vessels may also play a part.

Professor Wilfred Trotter

The death, at the age of 67 years, of Prof. Wilfred Trotter, F.R.S., sergeant surgeon to the king, has removed the most eminent surgeon of the day. He was educated at University College, London, and spent the rest of his life at its medical school and hospital. He was physically frail and his schooling had been interrupted by spinal disease. Sir Thomas Barlow doubted whether he would survive city life, but his career was one of uninterrupted success and he graduated in medicine with honors in 1896. At University College Hospital he became a demonstrator of anatomy and in 1901 surgical registrar, thus making the usual progress to the post of assistant surgeon. He was also appointed surgeon to the East London Hospital for Children. An expert technician and incisive thinker, he soon began to exercise a great influence. He was attracted to difficult surgical problems and made a reputation for removal of malignant growths which daunted others, particularly in the mouth and pharynx, for which he laid down principles of permanent value. His first paper, on the surgery of the hypopharynx, was read before the Medical Society of London. It lasted only ten minutes but left his audience speechless because it was so complete. Later he delivered Hunterian lectures on malignant disease of the upper respiratory and alimentary tracts which were authoritative for a generation. He and Victor Horsley were the pioneers in England in surgery of the thyroid gland. Another subject which he illuminated was head injuries, on which he wrote the article in Choyce's System of Surgery. He and his assistant Mr. Morriston Davies performed experiments on their own limbs on the clinical evidences of nerve regeneration. This work is recognized as of permanent value. He became preeminent in the surgical world, the consultant to whom other surgeons would turn for advice. His opinion was regarded as reliable as anything human can be. Honors of all kinds were showered on him, including the highest scientific one, the F.R.S., which he was the only surgeon to possess. He earned the gratitude of the late King George whom, in conjunction with Sir Hugh Rigby, he treated for empyema. But he firmly declined to accept a title, which in this country is the usual ambition of the distinguished physician or surgeon.

TROTTER THE SURGEON AND TROTTER THE PHILOSOPHER

An astonishing fact is that Trotter achieved distinction of the first rank not only as a surgeon but as a philosopher. In 1908 he contributed two papers to the *Sociological Review* entitled "Herd Instinct." He argued that herd instinct not only was responsible for the phenomenon observed in crowds but determined the thought and behavior of each individual, however isolated he might be. In it he found an important source of the individual's "opinions, credulities, disbeliefs and weaknesses." He later expanded his views in a book entitled "Instincts of the Herd in Peace and War," which is generally regarded as a masterpiece. In Germany it led to the mistake of thinking that there were two men, Trotter the surgeon and Trotter the philosopher. Much that he wrote was inspired by the last great war, and its application to the present war is obvious. He made a penetrating analysis contrasting the German and English mentalities. Germany was the type of the aggressive herd; she had modeled her soul on the wolf's. She was already a finished product; her ideal was fulfilled. She had nothing to strive for except to impose her will on the world. England had taken as her model the bee and still lagged behind fulfilment of her ideal. In her unbroken security of a thousand years she had leisurely, perhaps lazily, pursued her path toward social integration of

an ever closer and deeper kind. She had no thought of herself, no consciousness of her destiny, no will to power. She had allowed her empire to be won by restless younger sons and had shown no gratification in their conquests. After a thousand years she seemed as far as ever from her goal. Her society was irregular, uncoordinated and split into classes at war with one another.

AUSTRALIA

(From Our Regular Correspondent)

Dec. 6, 1939.

Australian Poisoning Statistics

Details of deaths from poisoning in Australia for the year 1938 correspond closely with those for 1937, the lowest for ten years. Suicides by poison during the year totaled 170 and deaths from accidental poisoning thirty-seven. The incidence of accidental poisoning is recorded as one in every 187,289 of population or one to 1,796 of total deaths. Other figures show that fourteen deaths from snake bite occurred in 1938, the highest for eight years, and eighteen deaths were due to food poisoning. It is clear, however, that the general trend of these statistics is downward, thus affording a primary justification for the inconveniences imposed by statute and regulation at all stages of the normal chain of distribution of poisons.

Science and Humanity

Dr. R. A. Millikan, American scientist, has recently completed a lecture tour of the Australian states on the general theme Science at the Service of Humanity. The motives of men, their mode of life and their outlook were much the same, he says, when his grandfather in 1825 loaded in a covered wagon his young wife and all his worldly goods and trekked west from Massachusetts to the banks of the Rock River in western Illinois as when, 4,000 years before, Abraham trekked west from Ur, of the Chaldees. But the changes that have occurred within the last hundred years, not only in the external conditions under which the average man passes his life on earth but in his superstitions, philosophy, conception of religion and world outlook, are probably greater than those of the preceding 4,000 years. Life seems to remain static for thousands of years and then to shoot forward with amazing speed. The cause of the recent rapid and enormous change is found in the discovery and utilization of the means by which heat energy can be made to do man's work for him. The key to the whole development is found in the use of power machines. It is of the utmost importance for human progress to get into the consciousness of the common man the significance of the fact that use of power has brought about these social changes. This is why we no longer drive our ships with human slaves, as did the Romans and Greeks. This is why we no longer enslave whole peoples, as did the Pharaohs, for building our public structures and lash them to their tasks. This is why ten times as many boys and girls go to high school today in the United States as were there in 1890. This is why we have now an eight hour day, instead of, as then, a ten or sometimes fourteen hour day. Science makes it well-nigh certain that we shall increase in economic well-being in future as we have in the past in just the proportion in which we continue to apply science and engineering to our industries. Science should produce more in goods and services each hour and free more men and give more brains to education, research and art. Forecast of the future must depend first on what the future sources of power are to be and on the cost of that power. At present the main sources of power are coal and oil. This situation will continue for a thousand years, for though the oil will perhaps be gone in fifty years the coal will last for at least another millenium. The big steam plant is now nearly or quite as efficient as the best Diesel motor, but for small power purposes, motor vehicles and the like the internal combustion engine is and will continue to be indispensable. How-

ever, we already know how to make liquid fuel from coal, so that when the oil is gone we shall still be able to get liquid fuel for our internal combustion engines. There are no other possible sources of power of comparable cheapness. When the oil and coal are gone we shall get power either directly from the sun through solar motors or windmills or tidal machines, or else directly through growing and burning plants. But it will then cost us more than it does now. Fifty years from now the world will look to us, from the point of view of power, not so very different from what it looks now. But the most burning and most uncertain situation about the future has to do with social and political matters and it should be remembered that these forecasts are based on the assumption that our present civilization will not be destroyed by man's present or prospective wickedness, stupidity and folly. To prevent it the democracies must educate the common man to an understanding of a few of these fundamentals. Processes and technics responsible for the enormous changes of the last century will continue to improve greatly our economic and social well-being, but the main changes will come from a more general understanding by the voting public of these processes and a more intelligent use of them.

BUENOS AIRES

(From Our Regular Correspondent)

Dec. 18, 1939.

Health of the Argentine Army

According to statistics published by Dr. G. Ruza in the *Revista de sanidad militar*, illness in the army for 1938 was distributed as follows: total incidence 37.4 per cent (43.6 per cent in 1937), infectious diseases 17.9 per cent (20.8 in 1937), injuries 4.9 per cent (5.6), diseases of the digestive tract 3.2 per cent, of the respiratory organs 3.1 per cent, venereal diseases 2.5 per cent (3.4 in 1937), influenza 6.6 per cent, parotitis 5.4 per cent, measles 2.3 per cent, gonorrhea 2.1 per cent, pneumonia and bronchopneumonia 1.2 per cent, acute arthritis 0.5 per cent, diphtheria 0.3 per cent and typhoid 0.1 per cent. Deaths occurred in the ratio of 0.53 per cent (0.73 in 1937), chiefly from infectious diseases, pneumonia and bronchopneumonia.

Public Instruction Concerning Malaria

The malaria control division of the state department of health has initiated the publication of a health almanac for monthly distribution in which public attention is called to the dangers of malaria. Every calendar issue treats of a different subject, such as the treatment of malaria, advantages of a physical examination, free distribution of quinine through the state health department, the different kinds of mosquitoes, construction of protective cradles against the anopheles (including all necessary mechanical directions of how to make them, intended for rural sections) and the destruction of breeding places. The calendar sheets are artistically drawn up and also contain useful, easily understandable, illustrated agricultural information.

Enlargement of the Cancer Institute

A new six story pavilion was added to the Institute of Experimental Medicine for the Study and Treatment of Cancer in Buenos Aires and dedicated December 12. It contains 250 beds in separate rooms, thus increasing the total capacity to 550 beds, and two well equipped air conditioned surgical rooms. All modern ideas of hospital technic were incorporated in its construction and equipment. The cost amounted to about 1,000,000 pesos (about \$300,000). This Cancer Institute founded in 1923 is connected with the University of Buenos Aires and has been for sixteen years under the direction of Prof. A. H. Roffo, its founder. The original hospital consisted of one building. Now there are thirteen buildings, inclusive of the new pavilion, which occupy an area of 12½ acres. Its annual budget is 260,000 (Argentine) pesos (about \$78,559), with additional donations and endowments.

The work of the institute is done in three divisions: medical research, diagnosis and treatment, and social welfare. The research activities are devoted to the experimental study of cancer, biochemistry, physical chemistry, experimental pathology, pathologic anatomy, tissue culture, radiobiology and experimental surgery. The diagnostic division has a dispensary for the early diagnosis and treatment of outpatients. Up to the beginning of 1939, 82,000 patients had been examined in the dispensary; clinical treatment is in the hands of specialists. The annual number of patients has risen from 1,772 in 1923 to 8,554 in 1938, the number of consultations from 6,767 to 91,752, the number of treatments from 3,900 to 50,279. The total number of treatments (end of 1938) was 354,000. In 1923, 422 persons were admitted; in 1938, 3,174; altogether 27,599. The division of social welfare does not confine itself to handling patients of the institute. It seeks to educate the public by means of pamphlets and lectures. A "cancer hour" is held every Saturday, in which the schools may participate. There is a visiting nurse service which accords special attention to carcinomatous housewives and mothers. There is also a school of nurses.

A New Military Hospital

In May of this year the new large military hospital with its modern equipment was dedicated. The old military hospital is to serve henceforth as a tuberculosis sanatorium for the treatment and prophylaxis of this disease and will bear the name of Central State Hospital.

Marriages

MARVIN BERNARD GOLDSTEIN, Youngstown, Ohio, to Miss Emily Elizabeth Keller, at Newark, N. J., Nov. 4, 1939.

FREDERICK DA COSTA AUSTIN JR., Charlotte, N. C., to Miss Elizabeth Howard, of Fuquay Springs, Nov. 15, 1939.

EDWARD FRANK KAYE, Irvington, N. J., to Miss Evelyn Louise Heath, at Worcester, Mass., Dec. 30, 1939.

WILLIAM DEMPSEY FARMER, Durham, N. C., to Miss Elizabeth Sellers, of Burlington, in November 1939.

HERBERT M. KEIL, Portsmouth, Ohio, to Miss Antoinette McKenzie, at Temperanceville, Nov. 18, 1939.

ERCOLE A. ADDONIZIO, Providence, R. I., to Miss Beatrice A. Meliusis, of Shenandoah, Pa., Nov. 11, 1939.

RAYMOND GEORGE JACOBS to Miss Mildred Loomis, both of Enid, Okla., in New Orleans, Nov. 4, 1939.

MAURICE J. McELLIOTT, Boston, to Miss Veronica Durkee, of Woburn, Mass., in November 1939.

VALENTINE R. MANNING JR., Philadelphia, to Miss Frances K. Blanch, of Bristol, Pa., Nov. 23, 1939.

FRANCIS JOHN DENNING, Steubenville, Ohio, to Miss Eileen Gallagher, of Chicago, Nov. 23, 1939.

DONALD A. COWAN, Sault Ste. Marie, Mich., to Miss Esther E. Ball, of Brimley, Dec. 2, 1939.

PHILIP WOOD ODEN to Miss Martha Lorraine Sanders, both of Richmond, Va., Sept. 9, 1939.

GROVER CLEVELAND ENGLISH to Miss Ann Dooley, both of Mount Pleasant, Tenn., recently.

HUGH S. EDWARDS, Atlanta, to Miss Kathleen A. Williams, of Holden, Mass., Dec. 9, 1939.

CLAYTON S. HITCHINS to Miss Florence Jeannette Shive, both of New York, Nov. 2, 1939.

DENNIS B. FOX, Nashville, Tenn., to Miss Dora Helen Jones, of Jonesboro, Dec. 15, 1939.

CLIFFORD W. KUHN, Portland, Ore., to Miss Florence Palm, at Wheeler, Nov. 26, 1939.

LEO HERMAN CRIEP to Miss Merla Jane Rosenfield, both of Pittsburgh, Dec. 14, 1939.

ALLEN H. HOOVER to Miss Margaret B. Dailey, both of Chicago, Oct. 21, 1939.

GEORGE DAVIS, Xenia, Ohio, to Mrs. Olga Reed of Mansfield, recently.

Deaths

William Reginald Morse, Lawrencetown, Nova Scotia, Canada; McGill University Faculty of Medicine, Montreal, 1902; Associate Fellow of the American Medical Association; formerly dean and professor of anatomy, and associate professor of surgery, West China Union University, College of Medicine and Dentistry, Chengtu, Szechwan, West China; a medical missionary of the American Baptist Foreign Mission Society; fellow of the American College of Surgeons; translated various books into Chinese; aged 65; died, Nov. 11, 1939, in Boston of coronary thrombosis.

Edwin Bosworth McCready, Pittsburgh; Medico-Chirurgical College of Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania and of the American Psychiatric Association and fellow of the American College of Physicians; past president of the American Therapeutic Society; for many years director of the mental health division of the Juvenile Court; on the staff as examining psychiatrist at the Pittsburgh City Home and Hospitals, Mayview, Pa., and the Thorn Hill School for Boys; aged 59; died, Nov. 3, 1939, of coronary occlusion.

John Conover Clayton, Freehold, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1907; member of the Medical Society of New Jersey; fellow of the American College of Physicians; served during the World War; past president and secretary of the Monmouth County Medical Society; on the staff of the Fitkin Hospital, Neptune; aged 57; died, Nov. 25, 1939, in the Princeton (N. J.) Hospital, of coronary thrombosis.

Joseph Edmond Dube, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1894; Université de Paris Faculté de Médecine, France, 1896; emeritus professor of clinical medicine, University of Montreal Faculty of Medicine; fellow of the American College of Physicians; on the staff of the Hotel-Dieu de St. Joseph; aged 71; died, Nov. 25, 1939.

Walter Lett Hackett, Detroit; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1910; Detroit College of Medicine, 1913; member of the Michigan State Medical Society; fellow of the American College of Surgeons; past president of the Detroit Academy of Surgeons; aged 58; on the staff of St. Mary's Hospital, where he died, Nov. 4, 1939, of cerebral thrombosis.

William Ebenezer Brown, Cedar Rapids, Iowa; Bennett Medical College, Chicago, 1911; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; veteran of the Spanish-American and World wars; on the staff of St. Luke's Hospital; aged 59; died, Nov. 21, 1939, of lobar pneumonia type XVIII.

Frank Miles Keefe, Clinton, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; served during the World War; district surgeon for the Chicago and Northwestern Railway; aged 60; chief surgeon on the staff of St. Joseph's Mercy Hospital, where he died, Nov. 9, 1939, of an inoperable brain tumor.

Alfred Freeman McAlpine, Providence, R. I.; Tufts College Medical School, Boston, 1918; fellow of the American College of Surgeons; on the staffs of the Charles V. Chapin Hospital, Rhode Island Hospital and the Jane Brown Memorial Hospital; aged 46; died, Nov. 9, 1939, in Somerville, Mass., of an injury received in an automobile accident.

Edward Bangs Hallett, Gloucester, Mass.; Dartmouth Medical School, Hanover, N. H., 1887; formerly member of the school committee and board of health; at one time physician in the U. S. Public Health Service; aged 75; on the staff of the Addison Gilbert Hospital, where he died, Nov. 8, 1939, of pulmonary embolus and hypertrophy of the prostate.

Herbert Wilcox Knight, Bostic, N. C.; Baltimore Medical College, 1903; member of the Medical Society of the State of North Carolina; at one time a medical missionary; formerly superintendent of the Flint Goodridge Hospital, New Orleans; aged 66; died, Nov. 4, 1939, in the Rutherford (N. C.) Hospital of chronic myocarditis.

Charles Moline, Sunderland, Mass.; Harvard Medical School, Boston, 1903; secretary of the Franklin District Medical Society; served during the World War; for many years

member of the school committee and school physician; on the staff of the Franklin County Public Hospital, Greenfield; aged 62; died, Nov. 15, 1939.

Josiah S. Matthews, Denmark, S. C.; Medical College of the State of South Carolina, Charleston, 1900; member of the South Carolina Medical Association; member and past president of the state board of medical examiners; for many years member and chairman of the school board; aged 64; died, Nov. 16, 1939.

Willard Cyrus Stoner, Cleveland; University of Wooster Medical Department, Cleveland, 1906; fellow of the American College of Physicians; served during the World War; medical consultant and formerly director of the medical division of St. Luke's Hospital; aged 62; died, Nov. 11, 1939, of bronchopneumonia.

Albert Fremont Barfoot, Decorah, Iowa; State University of Iowa College of Medicine, Iowa City, 1886; Jefferson Medical College of Philadelphia, 1887; past president of the Winneshiek County Medical Society; aged 77; on the staff of the Decorah Hospital, where he died, Nov. 20, 1939.

Paul Otto Mahr Andraea, Jersey City, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1914; member of the Medical Society of New Jersey; served during the World War; on the staff of the Greenville Hospital; aged 50; died, Nov. 28, 1939, of coronary occlusion.

David McDonald Hackwell, Holland, N. Y.; University of Buffalo School of Medicine, 1920; for many years health officer of the towns of Holland and Sardinia; aged 46; died, Nov. 9, 1939, in the Mercy Hospital, Buffalo; of injuries received in an automobile accident.

Winfield Grant McDeed, Houston, Texas; Northwestern University Medical School, Chicago, 1904; member of the Radiological Society of North America and the American College of Radiology; on the staff of St. Joseph's Infirmary; aged 60; died, Nov. 30, 1939.

John Joseph Miniter, North Haven, Conn.; Georgetown University School of Medicine, Washington, D. C., 1930; member of the Connecticut State Medical Society; on the staffs of the Grace and St. Raphael's hospitals; aged 36; died suddenly, Nov. 4, 1939.

Michael William Harrington, Indian Orchard, Mass.; Baltimore Medical College, 1901; formerly bank president and school physician; past president of the Hampden District Medical Society; on the staff of the Mercy Hospital, Springfield; aged 66; died, Nov. 13, 1939.

Jacob Grant Herchelroth, Philadelphia; Medico-Chirurgical College of Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; aged 73; died, Nov. 8, 1939, in the Methodist Hospital of injuries received when he was struck by an automobile.

Horace Cook Holbrook, Salt Lake City; Medico-Chirurgical College of Philadelphia, 1906; member of the Utah State Medical Association; aged 58; on the staff of the Dr. W. H. Groves Latter Day Saints Hospital, where he died, Nov. 8, 1939.

George N. Bilby, Alva, Okla.; Louisville (Ky.) Medical College, 1894; formerly state health commissioner; served during the World War; aged 71; died, Nov. 26, 1939, in the Veterans Administration Facility, Hines, Ill., of mixed cell sarcoma.

Jacob Meyer Epstein, St. Louis; Washington University School of Medicine, St. Louis, 1893; served during the World War; aged 67; died, Nov. 22, 1939, in the Veterans Administration Facility, Jefferson Barracks, of arteriosclerosis and heart disease.

Wallace Norman Rehfuß, Bridgewater, N. S., Canada; McGill University Faculty of Medicine, Montreal, Que., 1903; fellow of the American College of Surgeons; past president of the Medical Society of Nova Scotia; died, Nov. 5, 1939.

John Ralph Marquis, Kemmerer, Wyo.; Nebraska College of Medicine, Lincoln, 1909; mayor of Kemmerer; chairman of the county board of commissioners; aged 61; was killed, Nov. 18, 1939, in an automobile accident.

Amos Keeler Du Bell, Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; served during the World War; aged 62; died, Nov. 27, 1939, in the Philadelphia General Hospital of hypertension and cardiovascular disease.

Robert Ray Roth, Camden, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1899; served during the World War; aged 64; died, Nov. 22, 1939, in the West Jersey Homeopathic Hospital of coronary embolism.

Correspondence

TREATMENT OF PNEUMONIA

To the Editor:—In THE JOURNAL Nov. 25, 1939, appears correspondence from Dr. Alvan L. Barach, New York, criticizing my clinical lecture in the panel discussion of pneumonia as "inadvertently and unfortunately misleading." Dr. Barach is a nationally known expert in the field of oxygen therapy. I agree entirely with his points pertaining to pathogenesis of anoxia and the methods of relieving it, but I disagree with his estimate of what is important in treating pneumonia.

When I made the statement that "cyanosis is the main and only important indication for oxygen therapy in pneumonia" I was aware of the fact that in severe anemia cyanosis cannot develop and that in circulatory failure cyanosis is sometimes masked by pallor. But, when either of these circumstances complicates the treatment of pneumonia, oxygen therapy is unimportant because it can do little good as compared with other measures more clearly indicated. Of the ten separate references to literature cited by Dr. Barach in his recent communication only one pertained to pneumonia, and in that one the only important indication for treatment was cyanosis.

Even though it was not his "purpose to discuss the importance of oxygen therapy in pneumonia," Dr. Barach's correspondence is useful and timely, for he points out the indications which I regarded as unimportant and, because of limited time, left out.

Dr. Barach lists so many important indications for oxygen therapy that one has little choice but to start oxygen as soon as the diagnosis is made. This would be all right if costs were nothing. Unfortunately oxygen does cost a lot, and since one of the real obstacles that stand in the way of pneumonia control is the cost of serum, undue emphasis on oxygen stands in the way of serum.

When I first came, a few years ago, to a large service where much oxygen was used, we were able to pay for serum, in large part, by using oxygen only for cyanosis, meanwhile cutting down our mortality rate. Until oxygen therapists can show actual reduction of mortality rates in controlled circumstances, they have not proved the "importance" of any indication for oxygen therapy in pneumonia.

M. A. BLANKENHORN, M.D.,
Cincinnati General Hospital.

SURGICAL PROCEDURE FOR ANGINA PECTORIS

To the Editor:—In THE JOURNAL, October 28, Dr. Rupert B. Raney advances the theory that preganglionic sympathectomy should be performed for relief of attacks of angina pectoris. In the description of his technic and in figure 4 the author indicates that all the rami communicantes entering or leaving the ganglia are severed. As it is impossible to distinguish preganglionic (white) from postganglionic (gray) rami by gross examination, it would seem that the author is actually completely severing the postganglionic as well as the preganglionic fibers.

It has been the practice of those who perform the operation of preganglionic resection to excise the intercostal nerve as it leaves the intervertebral foramen, thus insuring as far as possible ablation of the preganglionic fibers, leaving the ganglion and its emerging postganglionic fibers intact.

In his summary Raney says:

The operation is based on the assumption that in angina pectoris the sympathetic action on the coronary vessels is reversed, because of pathologic changes occurring about the myoneural junction; i. e., sympathetic impulses in such cases produce coronary constriction. Other operations heretofore recommended in the surgical treatment of angina pectoris have given relief at the expense of postganglionic fibers

or afferent fibers or both. Such postganglionic operations are subject to the same criticisms that have brought about discard of this type of operation in the surgical treatment of Raynaud's disease. Operations devised to relieve pain by the interruption of afferent pathways are only palliative measures; they remove the warning signal of an impending seizure but do not attack the patient's real trouble.

The operation here described is a preganglionic operation; the major portion of the afferent mechanism is left intact and thus the warning signal is not removed; Horner's syndrome is not produced, and the efferent pathways on the operated side are almost entirely interrupted.

I have for three or four years advocated a trial of this procedure to medical students and to several cardiologists, feeling, as does Raney, that the older types of operation were incomplete. It seems to me, however, that it is the thoracic nerves proximal to the ganglionated trunk which must be ablated, including of course a section of the trunk at the lowermost point of the operation.

Before writing this, I conferred with Dr. James C. White of the Massachusetts General Hospital, whose work on the sympathetic nervous system is well known; he is in complete agreement with my statements.

Perhaps the author will be good enough to explain how he determines grossly the difference between preganglionic and postganglionic rami, since his method does not include excision of the thoracic nerves involved.

FREDERICK S. WETHERELL, M.D., Syracuse, N. Y.

[This letter was referred to Dr. Raney, who replies:]

I should like to point out that the gray rami (postganglionic fibers) which are sectioned by the operation do not in any way contribute to the nerve supply of the coronary arteries, myocardium or other involved structures; they are strictly composed of sympathetic (postganglionic) fibers to the peripheral structures for the innervation of sweat glands or somatic blood vessels. James White (The Anatomic Nervous System: Anatomy, Physiology and Surgical Treatment, New York, Macmillan Company, 1935, p. 25) states: "In contrast to the white rami which connect the central pathways in the spinal cord with the sympathetic ganglia, the gray rami carry unmyelinated neurons to the peripheral structures." This quotation is also in general accord with all well known authorities on the subject. It should therefore be clear that postganglionic fibers to the coronary vessels are never found in gray rami; they either reach the coronary vessels from the sympathetic ganglia through the direct thoracic cardiac nerves or ascend in the sympathetic chain and reach the same destination through the cervical cardiac nerves; the cardiac nerves are not sectioned. Thus the contention that the operation interrupts postganglionic fibers to the coronary vessels seems to be beside the point. Perhaps I should have discussed the destination and function of the gray rami sacrificed. However, since these rami are in no way involved in coronary innervation, and since the paper was read several times before representative critical medical groups without this issue being raised, such an explanation did not seem to be necessary to the presentation of the facts of the operation itself.

Section of the thoracic nerves from the second to the fifth inclusive, as suggested by the commentator, could be expected to accomplish the preganglionic denervation of the coronary vessels as completely as the operation which I recommended, provided section is made sufficiently close to the exit of the nerves from the spinal canal to include the sympathetic preganglionic fibers. However, this naturally raises the question Is the sacrifice of the entire segmental nerve justifiable when such a sacrifice can be avoided and still accomplish the same purpose? The sacrifice of the gray rami, indicated in the illustrations of the article, are known to have no ill effects. On the other hand, section of an intercostal nerve not infrequently gives rise to severe intercostal neuralgia as well as to loss of function of the entire nerve.

R. B. RANEY, M.D., Los Angeles.

"FLUORIDE IN DRINKING WATER AND DENTAL CARIES"

To the Editor:—Lest a favorable verdict be found for the caries-preventing influence of fluoride in drinking water before sufficient evidence on the point has been accumulated, I would like to sound a note of caution. Dean and his co-workers did sound a faint warning in the report on their Illinois study (*Pub. Health Rep.* 54:862 [May 26] 1939), and in *THE JOURNAL* editorial, September 16, page 1132, the reader was again cautioned that some water constituent other than fluoride might possibly be the caries-inhibiting agent. So far as human caries statistics are concerned, no greater importance can be attached to the fluorine content of drinking water than to its total hardness. In 1937 I pointed out an inverse relationship between the incidence of caries and the hardness of drinking water in some seventy-five American cities (*J. Dent. Research* 16:417 [Oct.] 1937) and the observations of Dean and his associates bear mine out quite well. Caries was found much more prevalent among the school children of Macomb and Quincy than among those of Galesburg and Monmouth, but the latter two cities use very hard well water, with a high content of the salts of alkaline and alkaline earth metals (1,005 and 989 parts per million total fixed residue) in addition to a high fluoride content. Macomb and Quincy use river water of very low fixed residue (165 and 129 parts per million) along with a low fluoride content. In the regions of occurrence of mottled enamel and waters high in fluoride content there is always an accompanying high degree of total hardness in the drinking waters.

Evidence from studies on experimental animals does seem to indicate a fluoride protection against caries, but the case for fluoride protection in man cannot be considered closed until the fluoride effect has been completely dissociated from the complicating influence of total hardness. The statement of Cox (*THE JOURNAL*, November 4, p. 1753) that "the case should be regarded as proved" seems somewhat premature.

C. A. MILLS, M.D., Cincinnati.

THE DEGREE OF DOCTOR

To the Editor:—In *THE JOURNAL* August 26, page 876, I read a piece of correspondence entitled "The Degree of Doctor," written by Frederick Juchhoff, LL.M., Ph.D., Chicago. I believe that, should the good doctor of philosophy investigate more thoroughly, he would find that he has been a little unfair to a young profession with growing pains whose wholehearted end purpose is to conform in every respect to the ideals of the mother profession of medicine, to which it wishes to be considered a distinct branch.

We in this profession have endeavored each year through our council of education for chiropody colleges of our national association to increase and improve the training of the chiropodist. Investigation will prove that we have done this more thoroughly and more rapidly than any of the branches of medicine has in the past, not with any hope or intention of becoming something we are not but to improve what we already are. Few chiropodists desire to be anything more than what they are but they do wish to be better equipped to serve humanity in their small way, much as the dentist does in his work. It is with this thought in mind that I repeat We do not wish to be M.D.'s. If we did we would take a complete medical course, fitting ourselves for this work and earning our degree.

We wish sincerely to be educated, scientific doctors of surgical chiropody, limiting our work entirely to the feet as the dentist has to the teeth. The work beyond this scope is and should be the field of the orthopedic surgeon or general practitioner. If there are any chiropodists who would like to become M.D.'s and increase their field they must enter a class A medical school, study, work and earn the privilege.

As president of the midwestern sixteen states and member of the Iowa state board of examiners in our field, I feel that I am in a position to know that as a group we honor and respect medical doctors and do not wish to encroach on their work. We feel that complete knowledge in our field entitles us to the degree D.S.C. just as the degree D.D.S. is given the dentist, the D.D. the religious man, the Ph.D. the educator. After all, this is a mark of distinction and honor in each particular field and one degree has no direct connection to another. I trust that this will create a better understanding all around.

CHESTER H. FINDLEY, D.S.C., Davenport, Iowa.

NOTE.—With the efforts of an interested and active group of chiropodists to keep the practice of chiropody within its proper field, to elevate the standard of practice and to limit practice to qualified persons, all must sympathize. A collegiate degree, such as "doctor of chiropody," however, contributes nothing toward any of those ends. That seems to be the trend of Dr. Juchhoff's argument. As long as law does not define the minimum qualifications that a candidate for a degree must possess and forbids the conferring of a degree on any person not so qualified, any degree proves nothing as to the fitness of the holder—except possibly the traditional degrees of medicine and law. In the absence of such legally enforced standards, a board whose duty it is to license chiropodists and to regulate the practice of chiropody will do better to base its action on an exact knowledge of the nature and extent of the candidate's preparation for the pursuit of his calling, without insisting too strongly on the possession of a collegiate degree.—Ed.

THE POWER OF SURVIVAL

To the Editor:—Merely for the record I report the following case: An abandoned baby girl was found in an alley on a garbage pile the morning of Nov. 30, 1939. This 7 or 7½ month baby, weighing 2½ pounds (1,134 Gm.), delivered by an abortion performed about 7 p. m., November 29, was kept in a shoe box on a back porch all night and the next morning offered to a janitor to burn but he refused. The baby was then taken out of the box and wrapped in a piece of newspaper and placed in the alley.

The temperature was around 30 F. I was called by the police and took the baby to my office. After I worked on the baby for an hour and a half she was resuscitated. I called for a pulmotor and an incubator, but no oxygen was used. The baby was sent to Michael Reese Hospital, where she is now and is gradually gaining.

A. L'AVNIRE LUCAS, M.D., Chicago.

THE PRIVATE PRACTITIONER AND PREVENTIVE MEDICINE

To the Editor:—It is generally admitted that the private practitioner is not doing as much as he should do in promoting preventive medicine. For that reason public health agencies have had to take over vaccination and other programs even for those who can pay, because the work would not otherwise be done. I believe this is largely due to the lack of a proper approach to the problem in teaching undergraduates. I believe that every student should be taught to ask the routine question in history taking "What diseases have you been protected against by vaccination and when?" Furthermore, this should not be a mere ritual of recording but something should be done with the answer. That something should take the form of requiring students to render a dual diagnosis in every case (except when the patient is too sick to stand routine questioning)—a clinical diagnosis and a public health diagnosis. An example of the latter is "needs typhoid vaccination" or "needs smallpox vaccination"

or, in the case of a child "needs toxoid." If nothing is needed, that fact should be recorded as "public health diagnosis negative." This would instill into the mind of every student a public health approach and make him the important unit in promoting preventive medicine, which he should be but all too often is not.

FREDERICK R. TAYLOR, M.D., High Point, N. C.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

FLUOROSCOPY IN DIAGNOSIS OF MINIMAL TUBERCULOSIS

To the Editor:—In this locality emphasis is being given to the value of fluoroscopic examination in detecting cases of minimal tuberculosis. Will you kindly inform me as to the reliability of this examination in such cases.

M.D., Philippine Islands.

ANSWER.—In recent years a good deal of work has been done to evaluate the fluoroscopic examination in chest disease. A. C. Reid (*Am. Rev. Tuberc.* 20:46 [July] 1929; *Am. J. M. Sc.* 188:178 [Aug.] 1934; *New York State J. Med.* 31:337 [March 15] 1931), H. H. Fellows (*Am. J. M. Sc.* 188:533 [Oct.] 1934; *Am. J. Pub. Health* 25:109 [Feb.] 1935) and H. H. Fellows and W. H. Ordway (*Am. Rev. Tuberc.* 17:201 [March] 1928) have used the fluoroscope extensively and have found it much more valuable than the physical examination in the detection of pulmonary lesions. However, they did not employ roentgenograms of the chest as a routine to determine how many lesions the films would bring to light which the fluoroscope had failed to reveal.

H. W. Hetherington and E. W. Flahiff (*Am. Rev. Tuberc.* 27:71 [Jan.] 1933) used the fluoroscope and stereoscopic films in the examination of 347 persons, with the result that with the fluoroscope they frequently failed to detect pulmonary lesions located above the clavicle.

R. E. Boynton, H. S. Diehl and C. E. Shepard (*Am. Rev. Tuberc.* 37:49 [Jan.] 1938) reported observations on 5,000 university students, using the physical and fluoroscopic examinations on all and x-ray films of the chests of the tuberculin reactors. They found that the fluoroscopic examination detected evidence of the disease in three fourths of the cases with minimal and moderately advanced involvement and in all of the cases of far advanced pulmonary tuberculosis.

Some physicians state that they are able to detect 95 per cent of significant pulmonary lesions by fluoroscopic examination. Obviously the 5 per cent which they fail to find are minimal lesions, and as in most groups of cases reported not more than 10 to 20 per cent of the lesions found are in the minimal stage, it would appear that the fluoroscopic examination fails to reveal a high percentage of the lesions in this stage.

The x-ray film also fails to reveal any lesions that are not macroscopic in size and some which are. However, it is the general consensus that it is superior to the fluoroscopic examination.

With a special x-ray unit, R. H. Stiehm (*Journal-Lancet* 59:122 [April] 1939) has done some work which promises to place the fluoroscopic examination on a par with or possibly above the x-ray film in the detection of small lesions. He has discovered minimal lesions with this special unit which were entirely overlooked even on stereoscopic films. He has the advantage of being able to rotate the chest so as to visualize parts that are not clearly seen on an ordinary postero-anterior exposure either with single or with stereoscopic films. When the patient is in the position in which the examiner visualizes the shadow, he makes a small film with an attachment to the fluoroscope.

It must be clearly understood that the shadow seen on fluoroscopic examination does not constitute a diagnosis. This is also true of the x-ray film. One must avoid the error of visualizing a shadow with the fluoroscope and making a film as the final step in diagnosis. These methods only locate the lesion, after which its etiology must be determined by laboratory and clinical examination and often with serial x-ray film or fluoroscopic examinations over a considerable time.

MONGOLISM AND FERTILITY

To the Editor:—Will you please discuss the question of whether or not "mongolians" are sterile, and, if not sterile, the advisability of sterilization.

M.D., Oregon.

ANSWER.—Down, who first described mongolism in 1866, found that his patients rarely lived to puberty, usually dying of tuberculosis at an early age. He felt, moreover, that tuberculosis was probably the hereditary origin of the degeneracy. In recent years improved hygiene has allowed the mongoloid to live past the age of puberty, and the expectation of life has extended into the third or even the fourth decade. Potency in the male and the ability to bear children in the female are therefore a medical problem today. Few data have been available until recent times.

An extensive investigation, reports of which have partly been published, by Clemens E. Benda at the Wrentham State School, Wrentham, Mass., discloses the following facts: About half of the mongoloid girls above the age of 15 do not menstruate and the other half menstruate most irregularly. None of the girls under observation have ever become fertilized and they do not show sexual activity. Pregnancy in the mongoloid, therefore, is practically impossible. No authentic case has ever been reported. The ovaries of mongoloid girls, moreover, at the age of about 10 years show degeneration and from their appearance one would judge that these ovaries would never function.

Male mongoloids are probably not capable of impregnating a female. There is no definite case reported of a mongoloid doing so. Autopsies, moreover, on three males aged respectively 16, 21 and 30 years failed to reveal any spermatozoa. The testicles also were hypoplastic and degenerated. Some mongoloids may have strong sexual tendencies and perversions, but it has not been demonstrated that any are capable of fertilization.

Mongoloids who are idiots or imbeciles do not need sterilization. A few mongoloids who are on the borderline and live outside an institution might possibly need to be sterilized. The chances of a male mongoloid being potent, however, are minimal. Whether to sterilize or not would depend on the sexual activity of the individual and the chances of his impregnating a female.

References:

- Down, J. L. H.: Observations on an Ethnic Classification of Idiots, Clinical Lectures and Reports, *London Hosp.* 3:259-262, 1866.
Benda, C. E.: Studies in Mongolism: Growth and Physical Development, *Arch. Neurol. & Psychiat.* 41:83-97 (Jan.) 1939; correction 41:378 (Feb.) 1939. Studies in Mongolism; Thyroid Gland, *ibid.* 41:243-259 (Feb.) 1939. Also personal communication.

WHOLE BLOOD IN GASTROINTESTINAL TRACT

To the Editor:—Why is whole blood, when swallowed as in hemorrhage of the upper gastrointestinal tract, so irritating and why does it usually initiate nausea and vomiting? Is whole blood ever digested in part or does it pass through the gastrointestinal tract unchanged? If soft is added to whole blood does it alter its digestibility? If whole blood is defibrinated, preventing its coagulation, can part of the food value of blood be utilized?

Walter W. Busby, M.D., Milwaukee.

ANSWER.—There is no reason why either swallowing whole blood or having free blood in the upper gastrointestinal tract should cause nausea and vomiting; however, the condition which causes blood to be swallowed or free in the upper gastrointestinal tract is quite likely to cause nausea and vomiting. Whole blood either laked or coagulated is not irritating to the stomach. According to Best and Taylor (*Physiological Basis of Medical Practice*, Baltimore, Williams & Wilkins Company, 1939, p. 829), the sensation of nausea is felt in the back of the throat or the pit of the stomach and in its milder degrees is merely a "sinking" sensation in the epigastrium. Increased tension on the walls of the stomach or duodenum is a potent cause of the sensation. Nauseating odors cause the lower border of the stomach to descend an inch or two, as a result evidently of sudden relaxation of the abdominal muscles. This movement would tend to stretch the esophagus and gastric walls and so exert tension on the nerve fibers. Vomiting, according to the same authorities (page 782), involves the coordinated actions of the muscles of the stomach, esophagus and abdominal wall. The act may also be associated with antiperistaltic movements in the intestine. The muscular mechanisms are governed by a center in the medulla which discharges impulses along numerous efferent nerves and may be influenced by afferent impulses arising in the stomach, in other viscera or in almost any region of the body.

Yes, whole blood may be digested in part and also pass through the gastrointestinal tract unchanged. When blood reaches the gastrointestinal tract it is still composed of red and white cells and serum, with vitamins and minerals. Should the mediums which it goes into cause the red blood cells to be broken, the hemoglobin will be dealt with as the hemoglobin of any other source (such as from meat). Should the proteins

of the serum be coagulated and gather the cells of the free blood into a mass, it will serve also as a source of unhydrolyzed fat, protein and carbohydrate. The motility of the gastrointestinal tract will regulate the length of time that the blood will be in contact with the digestive ferments; thus the longer the contact the more blood is digested. If salt is added, it might help by causing the red cells to break and lose their hemoglobin, or it might help also by stabilizing the electrolytic balance of the blood if there is a deficiency in blood chlorides.

Yes, whole blood can be utilized, whether defibrinated or not.

COMBINED EXTRA-UTERINE AND INTRA-UTERINE PREGNANCY

To the Editor:—I would appreciate any information concerning the frequency of a normal uterine pregnancy accompanied at the same time by a tubal pregnancy. I have a patient at the present time on whom I operated in June for a left tubal pregnancy of approximately six or eight weeks' duration, who was also pregnant in the uterus. She is progressing normally and expects to deliver next month.

Philip S. Joseph, M.D., Alice, Texas.

ANSWER.—Combined extra-uterine and intra-uterine pregnancy is not exceptionally rare; 213 cases were collected in 1933 by A. A. Gemmell and H. L. Murray (*J. Obst. & Gynaec. Brit. Emp.* 40:67 [Feb.] 1933), and many have since been reported. Double tubal gestation has been observed, also two gestation sacs in one tube. Twins and even triplets (Baldwin) have been found in one sac. Foetus papyraceus may also occur in combined gestations as well as in twin ectopic gestation.

Extra-uterine and intra-uterine pregnancy offers a serious prognosis. Abortion of the uterine ovum precedes or follows the rupture of the ectopic sac, but death from internal hemorrhage may occur before abortion takes place. Rarely the woman goes to term and then labor is usually spontaneous, but death frequently follows from internal hemorrhage or sepsis starting from the abdominal mass. The extra-uterine fetus rarely obstructs the passage of the intra-uterine fetus. If the ectopic pregnancy is successfully terminated, the patient may go to term with the other normally. Both fetuses may be delivered alive at term.

REFRIGERATION AND MALIGNANCY

To the Editor:—Will you kindly answer the following questions, which will be of material assistance to me: 1. Have those persons whose experience permits an expression of opinion been led to believe that cryotherapy is a progressive step and will find a permanent place in the treatment of cancer? 2. Are there enough data on record at this time for one to believe that the results are favorable and permanent or unfavorable and temporary? 3. Is pain relieved in the advanced stages of cancer? 4. Roughly, about how many patients have been treated and what is the longest time they have been under professional and expert observation? 5. Is there a favorable, unfavorable or noncommittal reaction toward cryotherapy on the part of the experts in the field of physical therapy?

Herbert W. Nafey, M.D., New Brunswick, N. J.

ANSWER.—1. There is no assurance that refrigeration will find a permanent place in the treatment of cancer, but there is continued clinical and biopsy evidence that sustained temperatures of around 40 to 50 F. produce regressive changes in certain highly undifferentiated cells of cancer type. The growth is retarded when temperature can be maintained at 90 F. or below, and regressive changes are seen when refrigeration periods have extended seventy-two hours or longer (Smith, L. W., and Fay, Temple: *Temperature Factors in Cancer and Embryonal Cell Growth*, THE JOURNAL, Aug. 19, 1939, p. 653).

2. As general refrigeration is hardly more than a year old, permanent or favorable results cannot be presented. With combined local and general measures of refrigeration, eighteen months of clearance of tissue from active carcinoma is the longest observation so far recorded.

3. Pain has been relieved when twenty-four hours of generalized refrigeration has been applied and even when local refrigeration has been administered. This benefit from the method may find a permanent place in the treatment of advanced painful conditions, including cancer.

4. This cannot be definitely answered. In one series more than seventy patients were treated and more than a hundred refrigeration inductions observed. The longest period of observation in the field of reduced temperature has been twenty-five months.

5. The work is too new to justify conclusions and as yet has not been paralleled with animal experimentation although carefully checked by tissue culture, biopsy and embryonal studies. The procedure of refrigeration should be carried out only in recognized hospitals with full and proper equipment and a special nursing staff familiar with the details of the problem.

HOME CANNING AND SACCHARIN

To the Editor:—Please give me information concerning preserving fruits for diabetic patients. Can fruits be preserved by putting them in saccharin?

Alvin C. Poweleit, M.D., Newport, Ky.

ANSWER.—According to the Farmer's Bulletin 1762, United States Department of Agriculture, "Home Canning of Fruits, Vegetables and Meats," fruits may be successfully canned in the home with or without the addition of sugar. Juicy fruits such as berries, cherries, currants and plums are best canned in their own juices without the addition of water when sugar is omitted. The less juicy fruits such as apples, peaches and pears when canned without sugar may require the addition of some water. Detailed directions for canning fruits without sugar may be found in the bulletin referred to. Saccharin is sometimes suggested as a substitute for sugar in home canned fruit. The consensus of various investigations, including those of the Referee Board, is that saccharin in the amounts ordinarily used in foods does not produce demonstrably harmful effects even when continued over a long period. However, there is some evidence that larger quantities may produce minor derangements, which might become more accentuated in pathologic conditions. Since saccharin is unnecessary for the successful preservation of fruit, its indiscriminate use in home canning is not to be recommended.

TREATMENT OF MULTIPLE SCLEROSIS

To the Editor:—Please comment on the later developments in the treatment of multiple sclerosis in the early stages. I am particularly interested in the intraspinal injections of vitamin B₁ as described by Stern in the *American Journal of Surgery* (39:495 [March] 1938) and in liver therapy as advocated by Goodall and Slater in the *Edinburgh Medical Journal* (43:368 [June] 1936). E. S. Watson, M.D., Estelline, S. D.

ANSWER.—No treatment for multiple sclerosis at any stage has stood the test of time. The optimism voiced by those reporting certain methods has frequently been due, it may be suspected, to the occurrence of spontaneous remissions at the time of treatment. The usefulness of liver extract in multiple sclerosis according to Dattner (*Wien. Klin. Wchschr.* 50:87 [Jan. 22] 1937) is explained by the frequent deficiencies in gastric secretion in this disease, and, if so, the cord changes to some extent may be considered analogous to those of the combined degeneration of pernicious anemia. The use of vitamins, especially B₁, by intravenous or intramuscular injection is now much in vogue but it is too early to appraise results. A Swedish observer, Grewin (*Acta psychiat. et neurol.* 14:285, 1939), noted "slight or no improvement in chronic cases." It is true that Stern was fortunate enough to have no fatality in connection with 200 intraspinal injections but past experience with intraspinal therapy for other conditions calls for caution, and it has not been proved that more vitamin enters the nervous tissue by this method than by the intravenous one. More drastic methods, such as cervical sympathectomy, electropexia and other methods of fever therapy, have also failed to produce satisfactory results in most cases. New methods continue to be reported. Thus, Stransky (*Monatschr. f. Psychiat. u. Neurol.* 93:237 [June-July] 1938), because few people over 50 years of age have the disease, advocates the intramuscular or intravenous injection of serum of healthy persons past 50. In an early case rest is probably most important, and intravenous injection of such arsenicals as sodium cacodylate or silver arspenamine as well as of vitamin B₁ is probably of some value.

ROENTGEN THERAPY FOR ASTHMA

To the Editor:—Has roentgen treatment been used for the relief of asthma, and if so with what result? Information as to how it is used would be interesting.

Orville Rockwell, M.D., Sunnyside, Wash.

ANSWER.—Roentgen treatment of asthma has been employed for many years, and numerous articles on the subject have been published. The results are fair in a small percentage of cases and the effects are usually temporary, lasting from a few weeks to a few months. Since specific (allergic) management yields a much greater return of benefit in an average group of cases of asthma, nonspecific therapy such as roentgen treatment should be limited to cases in which no results are obtained by the usual methods. According to one author (Feinberg, S. M.: *Allergy in General Practice*, Philadelphia, Lea & Febiger, 1934), the patients selected for this treatment are particularly those who have considerable enlargement of the hilus gland or those who have had their asthma occurring closely after pneumonia or influenza.

Varied technics in treatment have been used. Thus, at the Mayo Clinic (Maytum, C. K., and Leddy, E. T.: Roentgen

Treatment of Asthma, *J. Allergy* 10:135 [Jan.] 1939) anterior and posterior fields over the mediastinum are treated on two consecutive days. The treatment utilizes 135 kilovolts, a 6 mm. aluminum filter, a focal distance of 40 cm., 5 milliamperes and a twenty-five minute period. This constitutes 500 roentgens. Only 6 per cent of the patients with asthma were treated by roentgen rays, and of these 24 per cent obtained relief. Another technic that is worth consideration (McEachern, J. M.: X-Ray Therapy in Bronchial Asthma, *Canad. M. A. J.* 37:573 [Dec.] 1937) fractionates the doses. Treatment is given over the posterior mediastinum. The latter is divided into upper and lower ports measuring 15 by 15 cm. Each port receives a total of 500 roentgens, with doses of 100 roentgens a day to alternate ports (180 kilovolts; filter, 0.25 mm. of copper plus 1 mm. of aluminum; focal distance, 40 cm.; 8 milliamperes; total, 100 roentgens). The treatments cover a period of ten days. McEachern reported that 84 per cent of twenty-five patients showed improvement.

It should be emphasized that such treatments should be undertaken only by one who is well experienced in roentgen therapy, and then only after serious efforts with the usual procedures in the management of asthma have failed to yield results.

LOCAL REACTION FROM VACCINE

To the Editor:—I am working with toxin vaccine. I will not trouble you with the ordinary reactions. What puzzles me is this: intradermal tests will give an abscess pocket, and a marked erythematous reaction locally. If given subcutaneously or intramuscularly a lytic reaction sets in with generalized chills, fever, gastric symptoms, headaches and the like. If given subcutaneously in small doses below the threshold for general symptoms, the local reaction is still lytic and absorbable within three days to two weeks. This has happened half a dozen times in about 500 cases. These lytic pockets are sterile. The following outlines the method for making toxin vaccine: 1. Seed blood agar plates with original material and incubate for twenty-four hours. 2. Fish different colonies into broth and incubate for twenty-four hours. 3. Check for purity of strains and seed each into tubes containing 20 cc. of broth. 4. Incubate for seven days at 37 C. 5. Add one drop of tricresol. Heat at 56 degrees in water-bath for from eight to ten hours. 6. Subculture into broth and incubate for twenty-four hours to check for sterility. 7. If sterile, add one drop of tricresol and transfer each to a separate 60 cc. vaccine bottle, diluting to volume with the amount of sterile saline solution necessary. (Usual dilution volume 30 cc.) This medication is given intradermally, subcutaneously and intramuscularly. Any explanation of this curious reaction would be appreciated.

M.D., Michigan.

ANSWER.—The process described suggests a local allergic reaction comparable, perhaps, to the Arthus phenomenon. The vaccines injected contain mixtures of bacterial proteins, to which some individuals might be hypersensitive. Under such circumstances injection of the protein should cause intensified local inflammation with local retention of the injected materials and accumulation of leukocytes which would predispose to dissolution of tissue. This possibility could be tested by the intradermal injection of filtrates (Berkefeld or Seitz) from a vaccine into a patient known to be hyperreactive. This would show whether soluble materials were responsible for the adverse reaction.

MESCALINE, MARIHUANA AND COCAINE

To the Editor:—With reference to Walter Bromberg's article on marihuana of recent date, I should appreciate information on the following points: 1. Do the clinical picture and the patient's subjective impressions produced by marihuana resemble those produced by mescaline? 2. Are there satisfactory laboratory tests to determine the presence of cannabis, morphine and cocaine in the blood stream or body of a living person?

Walter R. Miller, M.D., U. S. Navy.

ANSWER.—1. While mescaline may cause a change in all the special senses, the hallucinations of sight are so pronounced that many investigators consider this to be practically the only constant effect produced. It consists in the appearance of vivid and bizarre colorings of objects with constantly changing combinations. The mind is clear, and there is no narcosis or tendency to sleep. With marihuana the only visual illusion is that of enlarged space. So that, while with marihuana there are subjective aberrations of time, space and sound, with mescaline the subjective illusions are concerned with color.

2. There is at present no dependable specific test which will identify cannabis or the resinous active ingredient, cannabinol. It is doubtful whether sufficient material could be extracted from the blood with chloroform for purification and examination.

Cocaine may be extracted from blood by adding sodium bicarbonate and extracting with purified petroleum benzin. The purified petroleum benzin is then evaporated and the cocaine is identified microscopically after reaction with gold or platinum chlorides. Morphine may be extracted from alkaline blood with

a mixture of alcohol and chloroform. Morphine reacts with Marme's reagent to give a characteristic crystalline structure. If there is sufficient material available, both alkaloids may be identified by the methods given in the United States Pharmacopeia.

TESTOSTERONE PROPIONATE AND AZOOSPERMIA

To the Editor:—In the issue of The Journal of Oct. 28, 1939, in answer to a query on page 1660 relative to thyroxine in hyperthyroidism, it is stated that "in a similar manner testosterone propionate may inhibit the function of the testis to the point of hypospermia." I have in several cases advocated its use in the so-called male climacteric conditions and would appreciate further information you may be able to give me in reference to the inhibition of function of the testes.

Maurice A. Sturm, M.D., Miami Beach, Fla.

ANSWER.—Testosterone propionate appears to interfere with the function of the normal testis because in doses of from 10 to 25 mg. daily it commonly causes a definite reduction in the spermatozoa count of normal men, sometimes to the point of azoospermia. The count usually returns to normal when treatment is discontinued. This means that in boys, or in men during the usual reproductive period, the testis should be stimulated to produce its own male sex hormone if it is capable of responding to stimulation, and substitution therapy with testis hormone should be used when the testis is not capable of responding adequately to stimulation. However, these considerations do not contraindicate the use of testosterone propionate for the so-called male climacteric.

WHOOPIING COUGH VACCINE

To the Editor:—Patients have repeatedly come to me for pertussis vaccine for their children, and when I have told them that a series of injections were necessary and that I could not even then guarantee immunity they have stated that other doctors were giving one injection which gave immunity for life. Can you advise me as to what this vaccine is and where I can obtain it?

M.D., New York.

ANSWER.—No record of any one-injection method for the prevention of whooping cough has been found. This doubtless refers to the new "double strength" *Haemophilus pertussis* vaccine (1 cc. = 20 billion) authorized by Northwestern University Medical School for whooping cough prevention. It requires a total of three injections (in alternate arms); the preferred interval between injections is three weeks.

DOSE OF THYROID EXTRACT IN HYPOTHYROIDISM

To the Editor:—Given a —22 basal metabolic rate in a man aged 40, weighing 120 pounds (54 Kg.), of alert mentality ("hypothyroid state") associated with asthma, can one determine at once roughly the maximum dose of thyroid to be given in order to avoid delay in testing tolerance with cautious small doses?

J. G. Levine, M.D., Tucson, Ariz.

ANSWER.—There is no way of determining in advance what dose of thyroid any patient with hypothyroidism will require for maintenance of a normal level of metabolism. The dose varies from patient to patient even though the depression of the metabolism is the same. It is desirable to begin with an inadequate dose and increase gradually until the minimum amount is being administered that will maintain a normal level of metabolism. At least six weeks is required for adjustment to any dose, so that changes in the dose should not be made more often than this. As a rule, in a man 40 years old it is safe to begin with a dose of 0.06 Gm. (1 grain) of U. S. P. thyroid daily.

CEREBRAL HEMORRHAGE AND COMA

To the Editor:—A patient aged 65, who was in a complete coma for fourteen days following a cerebral hemorrhage associated with a right hemiplegia and who after five and one-half weeks of illness is unable to speak (just mumbles), has great difficulty in swallowing so that nasal feeding is necessary. The patient is incontinent of bladder and bowel. What is the eventual prognosis as to regaining speech, resuming the normal swallowing function, and regaining bladder and bowel control? The patient is hypotensive and has auricular fibrillation. What is the longest period of coma reported in cerebral hemorrhage followed by recovery?

M.D., New York.

ANSWER.—The eventual outcome of cerebral hemorrhage depends on the site of the ruptured artery. The usual site is the lenticulostriate or "artery of cerebral hemorrhages." On the whole the eventual outlook with a right hemiplegia, i. e. a left cerebral hemorrhage, is poor for speech and particularly motor function. Bladder and rectal control will probably clear when, and if, consciousness returns. Three months is probably the longest duration of coma or semicoma. Pneumonia is now the most probable cause of death unless a new hemorrhage occurs.

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
George Washington University School of Medicine...		(1936) N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons		(1936) N. B. M. Ex.

Book Notices

The Pharmacopeia and the Physician: A Series of Articles on the Use in Therapy of Pharmacopeial Substances Which Appeared in The Journal of the American Medical Association. Fabrikoid. Price, \$1.50. Pp. 333. Chicago: American Medical Association, 1939.

The aim of this series of articles on the use in therapy of pharmacopeial substances is, frankly speaking, propaganda for the Pharmacopeia: propaganda in the best sense. The authors for each of these two dozen articles were carefully selected by a special committee of the Pharmacopeial Revision Committee with the aim in view of securing scholarly practicing physicians capable of presenting the use of remedies in such a way as to make them available in everyday practice. These articles are not prepared in accordance with a cut and dried outline but are the individual, and many times largely original, expression of eminent specialists on their experience in the selection of the best available remedy for everyday conditions of disease. The articles are replete with actual prescriptions, with diagnostic hints and with so much else that is useful to the practicing physician that it is difficult to see how he could spend his time to better advantage than by investing it in their study. He will probably find it advisable to keep the booklet where he can readily consult it. These articles and those which are to follow are intended as a remedy for the admittedly poor teaching of therapeutics in our medical schools. Perhaps this is the way therapeutics should be taught, for the undergraduate is actually not ready to benefit fully from this kind of instruction.

Textbook of Pathology. A Correlation of Clinical Observations and Pathological Findings. By Charles W. Duval, M.D., Professor of Pathology and Bacteriology, Tulane University School of Medicine, New Orleans, and Herbert J. Schattenberg, M.D., Associate Professor of Pathology and Bacteriology, Tulane University School of Medicine. Cloth. Price, \$8.50. Pp. 681, with 373 illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1939.

A new textbook of pathology is presented by Professor Duval and his associate in the department at Tulane University. The prefatory statement promises that it will stress the relationship between pathologic physiology and morbid anatomy, certainly a desirable approach and one too long delayed in almost all the standard textbooks. This promise is not fulfilled. If a pathophysiologic approach is attempted, it would seem desirable that some of the fundamentals underlying the objective manifestations of morbid anatomy would be discussed, so that the student might have some of his incessant "whys?" answered in a fashion that would satisfy his curiosity and permit a build-up for the more complex problems. Unfortunately there is nothing of this sort to be discovered.

If, in the opening chapter, proliferation is discussed, one might at least expect some mention of the physicochemical mechanisms that are involved and which have received such intensive investigation not only by the cytologists and physiologists but even by mathematical biophysicists such as Rashevsky. In six paragraphs the entire problem is dismissed; only forty-eight pages is devoted to a discussion of what might be termed the general principles of pathology, but 40 per cent of the space is devoted to illustrations, some of which are not even relevant. Such superficial treatment can hardly be expected to satisfy the well prepared medical student of today.

After two introductory chapters, special pathology follows in orthodox divisions for some 600 pages. For the practitioner this may prove useful but here again pathologic physiology becomes merely wishful thinking. Chapter 3, which covers the diseases of the hematopoietic system, contains thirty-four pages, but half of the discussion is devoted to thrombosis and embolism.

How any reader, let alone a beginning student in pathology, is to get an adequate concept of tuberculous infection from the few pages devoted to tuberculosis of the respiratory system, and the scattered information under the various organs, is certainly puzzling. The changing reaction with sensitization is not even mentioned.

If a student can get much of value in pathophysiology or even of orthodox microscopic pathology from the following discussion of neuritis (p. 275) he will be more successful than the present reader: "Neuritis.—A condition in which the nerves are the seat of lesion, either as the direct result of the action

of organic or inorganic toxins, or indirect through destruction of the governing motor and sensory neurons of the cord. Infection of nerves sometimes occurs as an extension of an infection from adjacent tissues, as in the instance of leprosy and tuberculosis. The more important excitants of neuritis are lead, alcohol, arsenic, diphtheria, vitamin deficiency, B. leprae, B. tuberculosis, viruses and other microbic toxins. . . . In the case of motor nerve involvement there is paralysis for the corresponding muscle or muscle fibers. Thus is induced partial or complete muscle paralysis; spastic if the involvement is for the upper motor neuron and flaccid if the lower. When the involvement is of sensory nerves the characteristic symptom is pain (neuralgia)."

In the discussion of the neoplasms there is only casual mention of the more recent experimental developments. As a sample, the opening of the first paragraph on page 514 is as follows: "Some of the most significant work in connection with the etiology of neoplasia is that of Carrel. This investigator claims that tar is capable of causing a certain type of neoplasm known as 'tar-tumor.'"

Hereditary factors merit the following five lines: "Finally it should be mentioned that the work of Maud Slye would seem to show a hereditary factor in certain neoplasia. Transmission from mother to offspring follows very accurately the mendelian principle. This investigator was able through careful breeding to reproduce cancer strains in mice and conversely to breed animals which were not susceptible to experimental cancer." Dr. Little might dissent.

It is hoped that the text will not be regarded as representative of the discipline in America.

The book is profusely illustrated, but the beginner will have difficulty in understanding some of the illustrations because there are no aids that might call his attention to the actual tissue alterations. A considerable number of the illustrations are poor from the point of view of technical reproduction. Others are irrelevant; in many all detail is lacking. The first illustration selected for the chapter on diseases of the alimentary tract shows a fascinating picture of a "hair-ball of the stomach." Possibly reminiscent of an era that long antedated the horse and buggy age, the selection might intrigue the psychiatrist. It would hardly be regarded by the teacher of pathology as evidence of good balance and proportion in a discussion of so important and practical a topic as the diseases of the gastrointestinal tract.

The publishers have used an excellent quality of paper, and the cloth binding appears to be serviceable.

Guiding Principles for Studies on the Nutrition of Populations. By Dr. E. J. Bigwood, Professor at the University of Brussels. League of Nations Health Commission. Technical Commission on Nutrition. Series of League of Nations Health 1939. III. 1. Official No.: C. H. 1401. (2.) Paper. Price, \$1.50; 6s. Pp. 281, with 7 illustrations. New York: Columbia University Press; Geneva, 1939.

In the present volume, Dr. Bigwood has summarized the opinion of nutrition experts about the proper methods of conducting studies on the nutritional status of populations. It is a technical monograph for research investigators. The book describes the important points that must be borne in mind when nutrition surveys of populations are conducted in order that the work may be done scientifically and in a way that will facilitate comparison with other surveys. There is also a critical review of the various methods of assessing the nutritive status of individuals. There are four types of dietary surveys, and each is described in detail. Such questions as the scope and duration of surveys are discussed, and attention is given to the qualifications necessary for members of an investigating staff, the number of investigators considered desirable and many other practical problems. Considerable space is devoted to the interpretation of the data obtained from dietary surveys. Investigators will find the chapter devoted to statistical considerations of the data most useful. Too often dietary surveys have been made in the past without adequate attention being given to some of the essentials described in the monograph. The first part of the book tells what should be done and how to do it. The second part is concerned with various methods of measuring the nutritional status of persons, and it is of considerable medical interest. There are discussions of somatometric, clinical and physiologic

tests. A chapter is devoted to some examples of various types of investigations that have been made. The appendix provides general conclusions derived by the author from a consideration of the various topics. A bibliography, an index of terms and various tables which provide record forms that have been used in different countries are also included. The author points out that measures of the nutritional status of a population group are never simple. Measurements of the body provide an indication of the general physical condition of the persons examined, but the observations do not relate exclusively to the nutritional status. Anthropologic factors affect body build. The author points out that the more complex methods of assessing the nutritional status are not suitable for use in large scale inquiries. The clinical and physiologic tests, however, yield data of great value in smaller surveys. The author emphasizes that the more detailed an investigation can be made, even though it includes a comparatively small number of persons, the more one may expect to learn of the relation of dietary habits to malnutrition.

Grundlagen der Röntgendiagnostik und Röntgentherapie. Von Chefarzt Dr. G. Schulte, Knappschafts-Krankenhaus, Recklinghausen, und Doz. Dr. med. habil. F. Kuhlmann, Medizinische Universitätsklinik Halle a. S. Paper. Price, 7.50 marks. Pp. 140, with 148 illustrations. Leipzig: Georg Thieme, 1939.

The authors in this book have reviewed concisely the physico-technical principles of roentgenography and roentgen therapy within a space of fourteen pages. In the same concise manner they have described the general pathologic conditions affecting the bones and joints and their differential diagnosis. They then review briefly the regional pathologic changes found in the skeletal system, using mostly diagrams to illustrate the characteristics of the various diseases affecting the anatomic regions.

Following this regional study, the authors discuss the general characteristics or principles governing the diagnosis of diseases affecting any or all of the bones or joints, such as inflammations, degenerative diseases, abnormalities of growth and changes incident to blood diseases. Bone tumors are described and illustrated on the basis of their special characteristics. One does not find complete descriptions or examples of the many variations which may be present in the obscure cases.

In the discussion of the lungs, they emphasize the importance of a roentgen investigation. They state that one cannot eliminate tuberculosis without a roentgen examination and then list twelve special reasons for making such an investigation. Brief descriptions are given of each typical disease of the lungs.

The characteristic appearances of the various diseases of the cardiovascular and gastrointestinal and genito-urinary diseases are described very briefly, detailed discussion of the various complications and differential diagnostic points being omitted.

Roentgen therapy is dealt with accurately but very briefly, and the authors give the indications for it in the various diseases. They give particularly a long list of inflammatory conditions that are benefited by this type of treatment.

As a whole, this book furnishes to the general practitioner, the student in radiology and the radiologist a brief summary of the methods used, the diseases which can be diagnosed and those which can be benefited by roentgen therapy. Conciseness, clear illustrations and accurate up-to-date radiologic information are its characteristics. It is well worth its price to these practitioners.

Fever Therapy Technique. By Jack R. Ewalt, M.D., Resident Psychiatrist, Colorado Psychopathic Hospital, Denver, Ernest H. Parsons, M.D., Captain, Medical Corps, United States Army, Stafford L. Warren, M.D., Associate Professor of Medicine in charge of Division of Radiology, University of Rochester School of Medicine, Rochester, N. Y., and Stafford L. Osborne, B.P.E., M.S., Associate in Physical Therapy, Northwestern University School of Medicine, Chicago. Foreword by Franklin G. Ebaugh, M.D. Cloth. Price, \$2.50. Pp. 161, with 16 illustrations. New York & London: Paul B. Hoeber, Inc., 1939.

In the introduction the authors state that this book is written for the purpose of presenting, in a brief space, the actual technic of administering the various forms of therapeutic fever. In general it may be said that the monograph fulfils this aim. It describes the methods at present in vogue for producing fever by means of blankets, radiant energy, heated moist air, warm water sprays, hot baths, high frequency currents, electromagnetic induction, malaria, typhoid vaccine, relapsing fever, rat bite fever, sterile milk, antichancroid vaccine and sulfur in oil. Separate

chapters are devoted to the more important of these procedures, namely to radiant energy, the hypertherm, high frequency currents and electromagnetic induction, malaria and, finally, typhoid vaccine. It can be readily understood that the attitudes of the four authors must necessarily differ. Therefore in the details of technic the subject matter is sometimes contradictory. However, these honest differences of opinion are not so outspoken that the value of the monograph is markedly decreased. After all, fever technic must be learned by actual clinical experience rather than by studying a book, no matter how well and how carefully the text has been assembled. In chapter x the authors pass beyond their original purpose and attempt to define the therapeutic value and dosage of fever in the various diseases which have been successfully treated by this method. Some of the ideas expressed in this chapter have a rather pedantic flavor and do not agree with the experience of many workers in the field. For example, the time-temperature dosage suggested for the treatment of syphilis of the central nervous system and dementia paralytica is much less than that which is ordinarily considered adequate. Also there is at present no general agreement that fever therapy is either useful in the treatment of nonsyphilitic inflammations of the eye or useless in multiple sclerosis. The monograph contains no statistics to support the various points of view and entirely personal attitudes are expressed in this chapter. This is perhaps in accord with the resolve of the authors not to review the literature. There is no bibliography. Almost no references to the literature are given. The index is adequate. All in all, the book should be useful for the instruction of nurses and technicians. It is hardly comprehensive enough to serve as a reference volume or guide for physicians or medical students.

The Heart-sounds in Normal and Pathological Conditions. By Oscar Orías, M.D., Director of the Institute of Physiology, Cordoba (Argentina), and Eduardo Braun-Menéndez, M.D., Director of Cardiological Investigations in the Institute of Physiology, Faculty of Medical Sciences, Buenos Aires. Cloth. Price, \$4.75. Pp. 258, with 128 illustrations. New York, Toronto & London: Oxford University Press, 1939.

This is a translation of the volume published in Buenos Aires in 1937. As stated in a notice of the book in *THE JOURNAL* July 9, 1938, page 196, the authors record the result of thorough experimental and clinical studies of the mechanism of normal and pathologic heart sounds and their registration by phonocardiographic methods, particularly with the aid of electrical amplification. There are many excellent illustrations. The work will be helpful to those interested in the physiology and pathology of the heart. The appeal to the clinician will be more limited.

Standard Methods for the Examination of Dairy Products: Bacteriological, Bioassay and Chemical. Seventh edition of *Standard Methods of Milk Analysis.* Cloth. Price, \$2.50. Pp. 190, with 22 illustrations. New York: American Public Health Association, 1939.

The seventh edition of this laboratory manual emphasizes once more the valuable service that the American Public Health Association renders by the establishment of committees to prepare such treatises. The last edition appeared in 1934. The present volume contains the newest approved methods for the bacteriologic and chemical examination of dairy products and a description of the bio-assay of vitamin D milk. In the appendix there are descriptions of several methods for testing by the phosphatase technic to determine whether milk has been properly pasteurized. None of the four methods described have been approved as a standard procedure, but the descriptions provided will afford various laboratories an opportunity to subject one or more methods to a thorough investigation.

It is noted with interest that the direct microscopic method for the examination of milk and cream for bacteria is described. This test permits the recognition of milk or cream with high bacterial counts within a few minutes, whereas the agar plate method requires many hours. It is interesting to note also the inclusion of a bio-assay method for determining the vitamin D potency of vitamin D milk. A standard procedure has long been in use for pharmaceutical products, but until recently no specific instructions for the bio-assay of milk have been generally available. The manual is indispensable for every health department and other laboratories concerned with the examination of dairy products.

Zwanglose Abhandlungen auf dem Gebiete der Frauenheilkunde. Herausgegeben von Professor Dr. Robert Schröder. Band I: Normale und pathologische Physiologie im Wasserhaushalt der Schwangeren. Von Dr. Herbert Albers. Paper. Price, 8.50 marks. Pp. 119, with 25 illustrations. Leipzig: Georg Thieme, 1939.

In this book the author discusses the normal and pathologic water metabolism of pregnant women. He first considers the significance of water for organic life and then takes up the question of the amount of blood and plasma found during pregnancy, the effect on these amounts produced by labor and their association with pregnancy edema. He also discusses venous pressure in healthy gravid women, in gravid women with toxemia and in women during labor. Another subject considered is the dependence of the colloid-osmotic pressure on the serum-protein picture in normal pregnancy in cases of toxemia and during the puerperium. The author also takes up the question: Is the vascular system more permeable to fluids and plasma during pregnancy? He answers this in the affirmative because he found increased permeability for water in 83 per cent of all the pregnant women investigated and increased permeability for protein in 62 per cent.

At the end of the book the author devotes a chapter to explaining the significance of his investigations for practical obstetrics. He makes a distinction between serious bleeding during pregnancy and postpartum hemorrhage. He calls the loss of blood during pregnancy, such as occurs in placenta praevia, "plasma bleeding," whereas he designates postpartum hemorrhage as "erythrocyte bleeding." The latter is highly dangerous; hence much quicker action must be taken to stop the bleeding which occurs post partum than that which takes place during pregnancy.

The book is highly technical and will appeal to those interested in the research aspect of obstetrics.

Proctology for the General Practitioner. By Frederick C. Smith, M.D., M.Sc., F.A.P.S., Proctologist to St. Luke's and Children's Hospital, Philadelphia. Cloth. Price, \$4.50. Pp. 386, with 145 illustrations. Philadelphia: F. A. Davis Company, 1939.

The information contained in this volume is that which usually is included in recent books on diseases of the anus, rectum and colon. The author has compiled his material according to a scheme which is customary in similar volumes. The general introductory chapters are on symptomatology, anatomic subjects, examination and diagnosis, preoperative and postoperative treatment and anesthesia. Chapters on diseases of the anus and rectum follow, and the book closes with a chapter on therapeutic suggestions.

Health for New York City's Millions: An Account of Activities of the Department of Health of the City of New York for 1938 with Comparative Vital Statistics Tables. John L. Rice, M.D., Commissioner of Health. Boards. Pp. 295, with illustrations. New York: Department of Health, 1939.

Through depressions and periods of prosperity, the Department of Health of the City of New York has continued to expand until its activities, expenditures and personnel are larger than that of most states. It has eleven bureaus and a number of "departmental boards and adjuncts." Its budget for 1938 was \$5,528,234, and its employees numbered 2,842 persons. It seems to be working in close cooperation with organized medicine, since credit is repeatedly given to the medical societies within its boundaries. The department is entitled to a considerable portion of the credit for the steady decline in morbidity and mortality within its jurisdiction. During the present century the standardized death rate per thousand of population has dropped from about 21 to 9.8. The infant mortality, which was 55 per thousand live births in the three year period between 1930 to 1932, declined to 42 in the period between 1936 and 1938. Thirty years ago the maternal mortality rate was 48 per 10,000 live births; by 1933 it had risen to 64. In 1938 the maternal mortality rate was 33 per 10,000 terminated pregnancies. Diphtheria declined from 1,593 cases in 1934 to 700 in 1938. This represents a case rate reduction per hundred thousand of estimated population under 15 years of age from 96 in 1934 to 44 in 1938. The diphtheria death rate, calculated on the same basis, fell from 6 in 1934 to 2 in 1938. Pneumonia had remained between 200 and 300 per hundred thousand of population until 1918, when it rose to nearly 400 and then fell to 94 in 1934,

when the effects of the new serum treatment began to be shown. Serum treatment may be assumed to be partially responsible for the further reduction of the death rate to 63 in 1938, but further data are needed before the exact role of serum therapy can be evaluated. Tuberculosis shows an even more startling and longer continued decline. Beginning in 1900 with a standardized death rate of more than 250 per hundred thousand, the decline was almost continuous until 1938, when it was 51. During 1938 more than 52,000 persons were roentgenographed in mass service. The size and diverse character of the population, and the health activities described, make this report an exceedingly valuable source of vital statistics for a considerable section of the population of this country.

Questions and Answers: The Questions and Answers in This Book Have Been Selected from Those Published in The Journal of the American Medical Association Department of Queries and Minor Notes in 1937, 1938 and 1939. Cloth. Price, \$2. Pp. 478. Chicago: American Medical Association, 1939.

The popularity of that department of THE JOURNAL known as Queries and Minor Notes has stimulated the collection in book form of about 500 questions and answers published in THE JOURNAL during the years 1937, 1938 and 1939. These have been selected because they concern subjects of great general interest and because of the high instructional value of the replies. The questions have been arranged according to the systems of the human body, beginning with the head, and also according to specific diseases such as diathetic and deficiency diseases. There are also questions on obstetrics, industrial medicine and many miscellaneous topics. The replies to the questions which are sent to THE JOURNAL are prepared by experts in the fields concerned, chosen from among the leaders in the United States and particularly from among those who have given special study to the problem that is raised. Every physician will find in this book material of great practical value. Since much of the material is presented in the form of case reports for solution, the volume is most interesting.

Reports on Biological Standards—V: Variables Affecting the Estimation of Androgenic and Oestrogenic Activity. By C. W. Emmens. Medical Research Council, Special Report Series, No. 234. Paper. Price, 40 cents; 1s. 3d. Pp. 71, with 22 illustrations. New York: British Library of Information; London: His Majesty's Stationery Office, 1939.

This monograph deals with the sources of error commonly encountered in biologic assays of estrogens and androgens. There is presented in great detail the differences in results obtained with various technics of assay and the factors responsible for these differences. The author has demonstrated the common fallacies in comparing various sex hormones among themselves either in crude extracts or in pure forms on a biologic basis. Biologic assays may vary to a marked degree and may be quite unreliable unless numerous factors influencing the results are rigidly controlled. The clinical interpretation of results on urinary assays performed hurriedly and with insufficient equipment are, therefore, open to grave doubt. This monograph is an excellent contribution to the problems of the bio-assay of sex hormones and should be read by all those whose interests lie in this direction.

Principles of Chemistry: An Introductory Textbook of Inorganic, Organic, and Physiological Chemistry for Nurses and Students of Home Economics and Applied Chemistry, with Laboratory Experiments. By Joseph H. Roe, Ph.D., Professor of Biochemistry, School of Medicine, George Washington University, Washington, D. C. Fifth edition. Cloth. Price, \$3. Pp. 503, with 58 illustrations. St. Louis: C. V. Mosby Company, 1939.

This edition should be welcomed by those who have become familiar with the excellence of the previous editions. The book offers in one volume the fundamental principles of inorganic, organic and physiologic chemistry, with emphasis on the last. Each chapter contains a list of questions for study. Some of these may be cited as examples of the method of treatment that has been employed. In the chapter on hydrogen there is a question about the use of this gas in the preparation of hydrogenated fats. In the chapter on water and hydrogen peroxide the student is asked about the uses of water in the human body; another question directs attention to dehydration of the body; and another inquires about the guiding principle for the maintenance of an adequate water intake by patients who cannot take fluids by mouth. In this manner the author has stressed the

biologic point of view throughout the volume. Despite the brevity of the treatment the information provided is accurate and in accord with recent knowledge of the subject. The chapters on foods, nutrition and internal secretions are particularly commendable for their accurate though brief presentation. Directions for laboratory experiments are included. There are a number of well chosen illustrations, and the appendix contains a list of names and formulas of common chemical compounds, a brief table of nutritional values of foods and a glossary of terms. There is a suitable index.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Patents: Patent Covering Basic Phenylmercuric Nitrate Invalid.—Nov. 19, 1934, Lyle A. Weed applied for a patent on a method of destroying or rendering innocuous pathogenic germs in contact with animal tissue. The method was based on the use of a certain organic mercuric compound that he claimed he had discovered which was not harmful to man or other animals. The supposed novelty in the alleged discovery, which seems to have constituted the primary basis of the patent, was Weed's claim that when mercurial compounds come into contact with body fluids the germicidal element in such compounds becomes available as a less soluble and less toxic substance and exercises a bactericidal effect as that substance slowly dissolves. He claimed that under the theory of ionization the positively charged mercury ions were adsorbed onto the negatively charged micro-organisms. Weed claimed further that he had discovered that basic phenylmercuric nitrate had such germicidal properties. On Sept. 17, 1935, Weed assigned his patent to the Hamilton Laboratories, Inc. The assignee thereafter, in the United States district court, eastern district, Tennessee, sued Samuel E. Massengill, doing business as the S. E. Massengill Company, charging infringement of the patent. Massengill contended that the patent was invalid and that therefore the acts that had been proved against him or that he had admitted did not constitute infringement.

A patent, said the court, is itself *prima facie* evidence that its subject matter is novel and that the requirements of patentability have been met. Such *prima facie* evidence, however, may be overcome by evidence to the contrary. When the defendant Massengill alleged in his defense that the patent that had been issued to Weed and assigned to the plaintiff was invalid, he assumed the burden of overcoming all reasonable doubt in favor of validity; of establishing that Weed was not the original, first and sole inventor and discoverer of the alleged germicide and germicidal method, or of any material or substantial part thereof, disclosed in the patent, and of showing that the alleged invention, in view of the prior state of the art, did not in fact constitute a patentable invention, improvement or discovery within the meaning of the patent law.

The evidence in the case showed that in 1924, ten years before Weed had applied for his patent, E. C. White had published an article in a periodical known as *Industrial and Engineering Chemistry* in which he discussed the relative toxicity and pharmacologic usefulness of organic compounds of mercury. In that article, White stated the very formula that was incorporated in the patent issued to Weed and suggested that other investigators take that formula, try its various combinations and thus unfold the whole story of pharmacologic mercurials. White's article, said the court, contained the answer to the problem that Weed claimed to have been the first to solve. The patent issued to Weed covered all organic mercuric compounds having the formula $RHgX$, in which R represents the phenyl radical of benzene carrying no substituent groups which react with either alkalis or acids to form salts and X represents a radical which exists as an anion, a negatively charged ion, when the compound is dissolved in water.

Weed opened the door to these compounds, but White had already left the door ajar by the earlier publication of his article. In the judgment of the court, the distinction between Weed's alleged discovery and White's earlier disclosure was that Weed based the germicidal power that he claimed, in part at least, on the theory that the positively charged mercury ions of his formulas, including permitted substituent groups, when coming into contact with body fluids were adsorbed onto the negatively charged pathogenic micro-organisms. The formulation of that theory, however, while interesting, did not save the patent. The theories of ionization and the electron-sharing ability, which permeated the claims for the patent, were known to the art prior to Weed's work. It was known earlier that organic mercury in certain combinations with various groups of characteristic behavior retained its germicidal power and was less toxic to human beings than when used alone. Basic phenylmercuric nitrate, too, had been known to the art as early as 1870, although it was known as phenylmercuric nitrate until one of the plaintiff's officers discovered that it was basic. The court pointed out, moreover, that, although the use of the compounds involved in this case seems to be of undoubted value, it was still more or less experimental and that even before Weed's researches in this field similar mercurials had been the subject of every method of use claimed in the evidence.

The court concluded, therefore, that the patent and its various claims were invalid for want of patentable invention or discovery. The suit charging infringement was dismissed.—*Hamilton Laboratories, Inc. v. Massengill*, 25 F. Supp. 464.

Health Insurance: Total and Permanent Disability Defined.—The defendant insurance company promised to pay, under a group policy, certain benefits to the plaintiff if he became totally and permanently disabled as a result of bodily injury or disease so as to prevent him from engaging in any occupation and performing any work for compensation. The plaintiff was employed by a lead company from 1926 to March 15, 1931, when he was laid off along with other employees. During the thirty-eight months thereafter he was employed at manual labor by different government agencies engaged in the prosecution of relief projects. On Dec. 31, 1936, more than five years and nine months after the termination of his employment by the lead company, he brought suit against the defendant insurance company to recover benefits on the theory that during the period of his employment by the lead company, and while insured under the defendant's group policy, he became totally and permanently disabled. From a judgment in his favor, the defendant company appealed to the St. Louis court of appeals, Missouri.

The testimony of the claimant, his wife and fellow employees at the lead company was that subsequent to an attack of rheumatism in 1928 he was able to work only at light jobs because he became short of breath, had aches and pains in his back and chest, was weak and nervous and suffered from kidney trouble which interfered with his rest at night, that he tired easily and that his fellow employees helped him to do his work so as to enable him to keep his job. This evidence clearly showed that because of his physical condition the claimant was unable to do his work in the usual and customary way and that he required the assistance of his fellow workers in order to retain his job. The fact, therefore, that the claimant continued on the job until he was laid off constituted no insurmountable obstacle to his right to recover benefits; such fact was a circumstance to be considered by the jury as to the merits of his claim, but it did not preclude him from the right to have it submitted to the jury.

One of two physicians who had made physical examinations of the plaintiff subsequent to the termination of his services with the lead company testified that at the time of his first examination in December 1932 the claimant had cardiovascular disease with enlargement of his heart to the right, involvement of the myocardium, hypertension or high blood pressure and tachycardia or increased rate of the heart beat; that he had bronchitis, arthritis and nephritis, and that at the time of his second examination in May 1937 these conditions had grown progressively worse. In his opinion, any strain or effort incident to ordinary manual labor would increase the claimant's

blood pressure and the rate of his heart beat, would cause further damage to his heart and kidneys and would unquestionably impair his health and life. The second physician, who examined the claimant in 1935 and in July 1937, testified that he found the claimant to be suffering from hypertension, enlargement of the heart and myocarditis or chronic inflammation of the muscles of the heart. He was likewise of the opinion that considerable exercise such as would be involved in the performance of ordinary manual labor would weaken his heart by raising his blood pressure and bring him nearer to the state in which his heart would no longer be able to compensate for the increased burden placed on it.

The principal issue involved in this case, it seems, was whether the fact that the claimant was employed by the government on relief projects for a number of years after his services with the lead company terminated constituted any evidence that he was not totally and permanently disabled. The court thought that it did not. Not only did the evidence show the existence of the claimant's disability while employed by the government agencies, but the court pointed out that it is a matter of common knowledge that relief work was instituted only as a temporary measure for relieving unemployment and affording men an opportunity to earn the bare necessities of life and not as an "occupation" within the meaning of the disability clause of the policy. Also, there was evidence that there was a considerable number of persons employed on relief projects who were known to be physically incapacitated to do ordinary manual labor.

To be permanently and totally disabled, continued the court, within the meaning of a policy of insurance such as the one sued on in this case, it is not necessary that the insured be inert and absolutely helpless; it is sufficient if it is shown that his infirmity renders him unable to perform, in the usual and customary manner, substantially all the material duties of his own occupation, business or profession or of any other occupation, business or profession which his age, training, experience, education and physical condition would fit him for except for his disabling infirmity. In the opinion of the court, the claimant was entitled to the benefits provided in the policy, and the judgment of the trial court in his favor was affirmed. —*Rogers v. Metropolitan Life Ins. Co. (Mo.)*, 122 S. W. (2d) 5.

Malpractice: Statute of Limitations Tolted Until Termination of Physician-Patient Relationship.—The defendant, a physician, operated on one of the plaintiffs in February 1932 to remove a cyst. Following the operation the patient complained of indigestion and gastritis, and the physician prescribed certain tablets. Subsequently, roentgenograms taken at the instance of another practitioner preparatory to the institution of colonic treatments revealed a foreign object in the patient's body, a skin clip, which, it was alleged, was left there by the defendant. The defendant examined the roentgenograms and told the patient not to worry, that the presence of the foreign object in her body would not "injure or be detrimental to her health" and that an operation to remove it was unnecessary. The patient, however, did not recover normal health and from time to time consulted the defendant relative to her condition. On June 7, 1933, he sent her to a hospital for observation and treatment by staff physicians, giving her a letter to the hospital stating that she had been having "considerable trouble with her throat" and that he would "like to have her looked over in the throat and nose department." According to the evidence, the hospital physicians made no reference to the foreign body and did not give her any advice with respect thereto. The patient continued to consult the defendant until as late as September 1934. In October 1934, another physician removed the skin clip. On Feb. 1, 1935, the patient and her husband sued the defendant for malpractice, and the trial court rendered judgment for the physician, holding that the action was barred by section 340, Code of Civil Procedure, California, which requires an action for injury caused by the wrongful act or neglect of another to be commenced within one year from the date of the injury. The plaintiffs then appealed to the district court of appeal, second district, division 1, California.

The physician contended that the statute should run from June 1933, at which time the patient had gone to the hospital and placed herself under the care of other physicians and that having failed to bring an action within one year after that date an action against him was barred by the statute. From the letter written by the physician referring the patient to the hospital, said the appellate court, it was apparent that the reference to the hospital was not made in connection with the presence in or the removal from the patient's body of the skin clip. There was evidence, too, that the only medical advice the patient received until October 1934 with reference to the skin clip and its possible deleterious effect was from the defendant, who was in constant contact with her until as late as September 1934. Since the record showed a continuation of the relationship of physician and patient until that date, there was a continuing obligation on the part of the defendant, and the statute of limitations did not commence to run until the termination of the relationship. Where the tort is continuing, the right of action is also continuing.

For the reasons indicated, the district court of appeal reversed the judgment of the trial court in favor of the physician and remanded the case for a new trial.—*Trombley v. Kolts (Calif.)*, 85 P. (2d) 541.

Malpractice: Qualifications of Physician to Testify as Medical Expert Witness as Affected by Locale of Practice.—To qualify a physician, says the district court of appeal, second district, division 2, California, to testify as an expert witness in a malpractice action, it must be shown that he possesses learning and knowledge of the subject under inquiry sufficient to enable him to speak with authority on the subject and also a familiarity with the treatment and degree of care and skill of other practitioners in the locality in question sufficient to enable him to testify whether or not the treatment furnished the patient was consistent with what other physicians in the same community in the exercise of reasonable care would do under similar circumstances. The theory supporting this rule is that a physician in a small community or village, not having the same opportunity and resources for keeping abreast of the advances in his profession, should not be held to the same standard of care and skill as that employed by physicians in large cities. With this reason in mind, the court held that a physician from Los Angeles might properly testify as an expert on a question of medical practice pertaining to the act of a physician whose practice was confined to the city of Pasadena. The court further held that, for the purposes of the rule of law referred to, the cities of Los Angeles and Pasadena are in the same locality, since they are contiguous, they are located in the same county, they have the same general hospital, and physicians in the two cities belong to the same medical society, attend the same lectures and have available the same facilities for the treatment of patients and for keeping abreast of the advances in their profession.—*Warneck v. Kraft (Calif.)*, 85 P. (2d) 505.

Society Proceedings

COMING MEETINGS

- American Academy of Orthopedic Surgeons, Boston, Jan. 21-25. Dr. Carl E. Badgley, 1313 East Ann St., Ann Arbor, Mich., Secretary.
- American Orthopsychiatric Association, Boston, Feb. 22-24. Dr. Norville C. La Mar, 149 East 73d St., New York, Secretary.
- Annual Congress on Industrial Health, Chicago, Jan. 15-16. Dr. C. M. Peterson, 535 North Dearborn St., Chicago, Secretary.
- Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. W. D. Cutter, 535 North Dearborn St., Chicago, Secretary.
- Middle Section, American Laryngological, Rhinological and Otolological Society, Kansas City, Mo., Jan. 19. Dr. Sam E. Roberts, Professional Bldg., Kansas City, Mo., Chairman.
- Mid-South Post-Graduate Medical Assembly, Memphis, Tenn., Feb. 13-16. Dr. A. F. Cooper, Goolwyn Institute Bldg., Memphis, Tenn., Secretary.
- North Pacific Pediatric Society, Portland, Ore., Jan. 27. Dr. J. S. Backstrand, 388 State St., Salem, Ore., Secretary.
- Society of Surgeons of New Jersey, Camden, Jan. 31. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.
- Western Section, American Laryngological, Rhinological and Otolological Society, Los Angeles, Jan. 26-27. Dr. Pierre Visle, 1910 Wilshire Blvd., Los Angeles, Chairman.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Annals of Surgery, Philadelphia

110: 801-960 (Nov.) 1939

- Influence of Certain Drugs and Anesthetics on Gastrointestinal Tone and Motility. J. D. Bisgard and E. K. Johnson, Omaha.—p. 802.
 Assay of General Anesthetic Agents. H. K. Beecher, Boston.—p. 823.
 Trends in Inhalation Anesthesia. W. Bourne, Montreal.—p. 830.
 Anoxia: Source of Possible Complications in Surgical Anesthesia. R. D. McClure, F. W. Hartman, J. G. Schnedorf and V. Schelling, Detroit.—p. 835.
 Present Status of Spinal Anesthesia. H. L. Foss and L. F. Bush, Danville, Pa.—p. 851.
 Spinal Anesthesia in Abdominal Surgery. R. R. Graham and W. E. Brown, Toronto.—p. 863.
 Further Experiences in Use of Spinal Anesthesia for Thoracoplasty. F. B. Gurd, A. M. Vineberg and W. Bourne, Montreal.—p. 872.
 Intravenous and Regional Anesthesia. J. S. Lundy, Rochester, Minn.—p. 878.
 Sympathetic Nerve Block as Adjunct Anesthesia in Minimal Resection of Stomach for Peptic Ulcer. W. F. Rienhoff Jr., Baltimore.—p. 886.
 Significance of Lipocais in Surgery. L. R. Dragstedt, D. E. Clark and C. Vermeulen, Chicago.—p. 907.
 Discussion of Multiple Neurofibromatosis (von Recklinghausen's Disease): Report of Two Cases Having Unusual Surgical Complications. R. Jones Jr. and D. Hart, Durlam, N. C.—p. 916.
 Effect on Bone Marrow of Disruption of Nutrient Artery and Vein. C. Huggins and E. Wiege, Chicago.—p. 940.
 *Chondritis of Knee. W. Darrach, New York.—p. 948.
 *Treatment of Avulsed Skin Flaps. A. W. Farmer, Toronto.—p. 951.

Chondritis of Knee.—Darrach states that the failure to cure internal derangement of the knee by removing a meniscus through a small incision has shown the wisdom of making an incision large enough to explore the knee joint more thoroughly. Of 376 arthrotomies for this condition 27.1 per cent were found to have an abnormal meniscus as the only lesion. In 15 per cent the anterior cruciate ligament has been found to be partially or completely ruptured. Other common additional lesions were hypertrophied fat pads, loose bodies, synovial changes and hypertrophic spurs. Four explorations revealed no lesions. The most commonly associated condition in this type of knee has been an alteration of the articular cartilage covering the femur, patella and tibia. In the majority of instances this condition involves only the superficial portion of the articular cartilage. Occasionally a large, deep crater is encountered extending into the bone, and a corresponding loose body may be found somewhere in the joint. It would seem proper to apply the term osteochondritis only to the latter type, if at all. When this condition has been found, it has been the author's custom to shave off with a knife or sharp gouge the affected cartilage, leaving as smooth a surface as possible. In eight cases he has seen at a secondary operation the late result. In six instances the areas were covered with shining, fibrous tissue either smooth or granular; in one this had occurred in the original lesion but new areas had appeared and in the other instance the original areas had deepened and enlarged. When this condition exists the return to normal function is distinctly slower than in the cases in which this complication did not occur. This applies especially to joint fluid. Although twenty-six of the patients were less than 20 years of age, the average age of the patients with chondritis was 33, as compared with an average age of 25 for those without chondritis. Because of its frequent association with other traumatic conditions of the knee, because it usually affects only the superficial portion of the articular cartilage and because it generally appears on two opposed surfaces, the author believes that this lesion is a response to trauma rather than the result of a general condition or to some interference with the subjacent blood supply. The term chondritis, therefore, seems more suitable than osteochondritis.

Treatment of Avulsed Skin Flaps.—Farmer reports four cases of severe avulsion of skin in which the method of treatment consisted first in the excision of all the avulsed skin and then sewing it back into position. The cleansing of the raw area is performed with aseptic rather than antiseptic fluids. Thus soap and water and saline solution are used. All the subcutaneous fat is removed from the avulsed skin by scraping or by cutting with curved scissors well into the dermis. The skin is then sewn accurately back onto the area from which it was removed. The graft is perforated with numerous small stab wounds. The primary dressing is of physiologic solution of sodium chloride. Firm pressure is obtained by bandaging and a plaster encasement insures immobility. The dressing is changed in from ten to fourteen days unless there is some special indication for an earlier examination. The author states that this type of graft gives a much better result than can be obtained with partial thickness grafts employed at a later date, and besides saving the damaged tissues from certain death it also saves much hospitalization and gives a better cosmetic and functional result than other methods.

Bulletin New York Academy of Medicine, New York

15: 717-768 (Nov.) 1939

- Distribution of Enzymes in Tissue and Cells. K. Linderström-Lang, Copenhagen, Denmark.—p. 719.
 Some Comments on Arteriosclerosis in Wild Mammals and Birds. H. Fox, Philadelphia.—p. 748.
 Psychologic Study of Migrainous Syndrome. H. Selinsky, New York.—p. 757.

Canadian Medical Association Journal, Montreal

41: 427-526 (Nov.) 1939

- Lower Back Pain. J. M. Murray, Ottawa, Ont.—p. 427.
 Multiple Pathologic Fractures Caused by Tuberculosis. R. I. Harris and H. S. Coulthard, Weston, Ont.—p. 434.
 Primary Osteomyelitis of Pubic Bone: Two Cases. J. J. Dinan, Montreal.—p. 436.
 Production of Hypertension by Prevention of Kidney Hypertrophy: Preliminary Report. W. F. Greenwood, R. Nassim and N. B. Taylor, Toronto.—p. 443.
 Treatment of Pneumococcal Pneumonia with Sulfapyridine (Dagenan). J. M. Kilgour, Montreal.—p. 445.
 *Effects of Tea Drinking. G. W. Halpenny and H. E. MacDermot, Montreal.—p. 449.
 Medical Service and Mechanized Formations. R. M. Gorssline, Montreal.—p. 454.
 Deaths Among War Pensioners. F. S. Burke, Ottawa, Ont.—p. 457.
 Asthma. H. K. Detweiler, Toronto.—p. 465.
 Method of Breech Delivery. N. W. Philpott, Montreal.—p. 468.
 Ambulatory Treatment of Fractures. A. Gibson, Winnipeg, Man.—p. 470.
 *Perforated Peptic Ulcers: Analysis of Series of 228 Consecutive Cases. A. Ross and C. Letourneau, Montreal.—p. 473.
 Malignant Tumors of Colon and Rectum. C. G. Heyd, New York.—p. 480.
 Anemia of the Newborn. J. Calder, Edmonton, Alta.—p. 484.
 Lipoma of Diaphragm: Report of Case. H. C. Ballon and L. Spector, Montreal.—p. 487.

Effects of Tea Drinking.—Halpenny and MacDermot observed the effects of tea and coffee drinking on five women and five men, all healthy young adults. The subjects arrived for the tests at 8:30 a. m. daily for more than a month after an ordinary breakfast exclusive of tea or coffee. They voided urine and the specimens were discarded, after which the subjects lay down. Half an hour later tea or coffee was given, each individual receiving three 8 ounce (235 cc.) cups, with intervals of forty-five minutes between the cups. At noon the patients were allowed up and ate a regular lunch, but no fluids were taken. One cigaret was allowed after meals. At 1:30 p. m. they again lay down and resumed the morning routine. They went home at 4:30 p. m. They were allowed anything they wished for their evening meal, together with reasonable activities, but no heavy smoking or drinking was permitted. Throughout the day at the hospital the urine was measured, from 8:30 a. m. to 4:30 p. m. The fluid intake also was recorded. The blood pressure, temperature, pulse and respirations were taken three times a day, at 9, 12 and 4. Reading, writing, knitting and talking were allowed throughout the day, but no other activities. Cups of cold and hot water, respectively, had no effects on the pulse, temperature, blood pressure and urinary output. Good clear tea brewed for five minutes (0.2 Gm. of tea to the cup) produced pleasurable and mild stimulation in all the subjects; a few perspired slightly, but there was no other objective changes. Four subjects were given the tea cooled,

with no different effects. With milk and sugar or lemon added to the tea, the same pleasurable effects were produced. The same brand of tea brewed for ten minutes whether clear or with milk and sugar added produced definite symptoms of distaste, with slight nausea and some abdominal discomfort in three subjects. A clear five minute brew of cheap tea made some subjects think the taste was even better than the good brand, while others thought it bitter and less palatable. Four complained of some abdominal discomfort, and one was slightly nauseated with the last cup. With milk and sugar added, the bitterness was removed, and all found it pleasant enough, with no other effects. The clear ten minute brew of the cheap brand of tea was definitely too strong and bitter. Nearly all the subjects were nauseated and many complained of abdominal discomfort. When milk and sugar were added, this strength was found to be more palatable but it still produced some abdominal discomfort. With coffee the results were roughly similar in that a seven minute brew (the ordinary length of percolation) gave pleasurable effects and the stronger, ten minute brew was found to be more bitter although producing no special symptoms. In contrast to tea and coffee, 0.13 Gm. of caffeine or 0.32 Gm. of tannin or a combination of the two taken in hot water produced violent and unpleasant effects (nausea, abdominal pain, perspiration, vomiting and clamminess of the extremities). The effects of tea on gastric acidity and peptic activity are slight and variable. It does not increase acidity nor does it seem to alter the basal metabolic rate.

Perforated Peptic Ulcers.—Ross and Letourneau present the results of 228 consecutive cases of perforated peptic ulcer, verified either at operation or at postmortem examination. The total mortality rate for the series was 20.6 per cent. Of the 228 patients, eight died before they could be operated on. Of the remaining 220 patients who were operated on there were thirty-nine who died, a mortality of 17.7 per cent. Nineteen different surgeons took part in these operations. Men outnumbered women eighteen to one. More than half (53.6 per cent) of the perforations occurred between the ages of 30 and 50; the average was 42. Only 7.5 per cent of the patients gave an absolutely negative history of peptic ulcer. The onset of initial pain occurred in the epigastrium and right upper quadrant in 70 per cent of the patients. Nausea and vomiting accompanied perforation in 67 per cent of the instances. The commonest physical signs were generalized tenderness and rigidity. The leukocyte count was between ten and eighteen thousand in 70 per cent of the patients, and in 91 per cent the perforations occurred round the pylorus. Closure and posterior gastro-enterostomy without drainage gave a lower mortality than simple closure, both with and without drainage. Necropsies revealed no post-operative deaths attributable to a broken down gastro-enterostomy wound. Complications were no more frequent following gastro-enterostomy than after simple closures. Average convalescence following gastro-enterostomy was from three to four days shorter than that following simple closure.

Indiana State Medical Assn. Journal, Indianapolis

32: 599-674 (Nov.) 1939

- Quality of Medicine. N. B. Van Etten, New York.—p. 599.
Major Tasks for the Medical Profession. E. M. Van Buskirk, Fort Wayne.—p. 604.
Diagnosis and Treatment of Pernicious Anemia. R. Isaacs, Ann Arbor, Mich.—p. 607.
Newer Concepts of Intestinal Infection. J. Felsen, New York.—p. 610.
Fatigue, Its Cause and Treatment. P. S. Johnson, Richmond.—p. 617.
Who Shall Choose the Anesthetic? E. T. Zaring, Terre Haute.—p. 620.
Intermittent Complete Heart Block: Report of Case. R. E. Lyons Jr., Bloomington.—p. 622.

Iowa State Medical Society Journal, Des Moines

29: 537-588 (Nov.) 1939

- Bacillary Dysentery. W. H. Holmes, Chicago.—p. 537.
What Constitutes Adequate Care of the Child with Diabetes Mellitus? J. D. Boyd and R. L. Jackson, Iowa City.—p. 545.
Treatment of Traumatic Injuries of Abdominal Cavity, Its Wall and Contents. W. E. Cody, Sioux City.—p. 549.
Traumatic Lesions of Thorax and Its Contents. W. A. Anneberg, Carroll.—p. 555.
Meckel's Diverticulum as Cause of Intestinal Obstruction. R. R. Edwards, Centerville.—p. 559.
Massive Atelectasis: Report of Four Cases. H. P. Miller, Rock Island, Ill.—p. 561.
Patent Thyroglossal Duct: Case Report. J. A. W. Johnson, Newton.—p. 565.

Journal of Clinical Investigation, New York

18: 617-844 (Nov.) 1939. Partial Index

- Variability of Proteinuria in Hypertensive Complications of Pregnancy. L. C. Chesley, Jersey City, N. J.—p. 617.
Clinical Studies of Blood Volume: VIII. Macrocytic and Hypochromic Anemias Due to Chronic Blood Loss, Hemolysis and Miscellaneous Causes, and Polycythemia Vera. J. G. Gibson 2d, A. W. Harris and V. W. Swigert, Boston.—p. 621.
*Peripheral Vascular Action of Estrogen in the Human Male. S. R. M. Reynolds and F. I. Foster, Brooklyn.—p. 649.
Studies on Destruction of Red Blood Cells: II. Chronic Hemolytic Anemia with Paroxysmal Nocturnal Hemoglobinuria: Certain Immunologic Aspects of Hemolytic Mechanism, with Special Reference to Serum Complement. T. H. Ham and J. H. Dingle, Boston.—p. 657.
Effect of Pitressin in Circulatory Collapse Induced by Sodium Nitrite. E. A. Stead Jr., P. Kunkel and S. Weiss, Boston.—p. 673.
*Effect of Paredrinol (α -N-Dimethyl-p-Hydroxyphenethylamine) on Sodium Nitrite Collapse and on Clinical Shock. P. Kunkel, E. A. Stead Jr. and S. Weiss, Boston.—p. 679.
Blood Chemical Changes in Boeck's Sarcoid, with Particular Reference to Protein, Calcium and Phosphate Values. G. T. Harrell and Sara Fisher, Durham, N. C.—p. 687.
*Vitamin C Requirement of Man: Estimated After Prolonged Studies of Plasma Concentration and Daily Excretion of Vitamin C in Three Adults on Controlled Diets. Elaine P. Ralli, G. J. Friedman and S. Sherry, New York.—p. 705.
Effect of Estrogenic Substance on Blood Sugar of Female Diabetics After Menopause. C. J. Gessler, J. A. Halsted and R. P. Stetson, Boston.—p. 715.
Serum Lipoids and Proteins in Hypothyroidism. E. F. Gilden, E. B. Man and J. P. Peters, New Haven, Conn.—p. 739.
Diet and Death in Acute Uremia. T. Addis and W. Lew, San Francisco.—p. 773.
*Changes in Glucose Tolerance of Obese Subjects After Weight Reduction. R. S. Hubbard and E. C. Beck, Buffalo.—p. 783.
Observations on Absorption, Distribution and Excretion of Sulfapyridine. W. H. Brown, W. B. Thornton and J. S. Wilson, Toronto.—p. 803.
Coagulation Defect in Hemophilia: Studies of Clot Promoting Activity Associated with Plasma Euglobulin in Hemophilia. E. L. Lozner and F. H. L. Taylor, Boston.—p. 821.

Peripheral Vascular Action of Estrogen.—Reynolds and Foster extend the list of the effects of estrogen on the peripheral circulation by observing the changes in cutaneous temperature and finger volume following the injection of estrogen to twenty normal adult men. Single observations on the effect of the estrogen were made on all subjects with the exception of three who received two injections and one subject who received nine injections. Approximately two thirds of the subjects showed an effect involving an increase in finger volume, commencing a few minutes after the injection and continuing from thirty to sixty minutes. The average percentage increase in finger volume was 4.6. No change in cutaneous temperature was observed. Injection of corn oil as a vehicle (as an unknown) had no such effect on finger volume in these subjects. The character of the response, along with other established facts regarding the vascular effects of estrogen, indicates that it depends on dilatation of the small vessels in the skin beyond the arterioles. There is no measurable increase in the rate of blood flow in the skin. The failure of estrogen to bring about dilatation of the cutaneous vessels in some subjects is unexplained.

Effect of Paredrinol on Circulatory Collapse.—Since in sodium nitrite collapse venous pooling and reflex arteriolar constriction occur, the ideal drug for the prevention of such collapse should not cause increased oxygen consumption or widespread chemical changes in the body. From studies of normal subjects, Kunkel and his co-workers found that paredrinol (α -N-dimethyl-p-hydroxyphenethylamine) fulfilled several of these requirements. Therefore they investigated its action in seven subjects with normal cardiovascular systems in whom collapse ending in syncope was induced by the administration of sodium nitrite. In four subjects the intramuscular injection of 25 mg. of paredrinol prevented the collapse induced in the upright position by sodium nitrite. In three others it had no effect. In two subjects with severe postural hypotension, symptoms of cerebral anoxia were prevented by the use of paredrinol. In seven of ten subjects in severe clinical shock resulting from infectious disease, the intramuscular or intravenous injection of from 15 to 50 mg. of paredrinol caused a rise in arterial pressure. Only two of these subjects showed definite clinical improvement. For one person paredrinol was effective both in the collapse induced by an acute streptococcal pharyngitis and in the collapse subsequently induced by motionless standing. The responses of the patients in severe clinical collapse differed from those in the normal subject as

follows: 1. From two to four times the amount of paredrinol was required to cause a significant elevation of blood pressure, and even then the arterial pressure rarely increased to hypertensive levels. 2. The cardiac rate was usually increased instead of decreased. 3. Repeated doses of the drug, when given after the blood pressure had returned to normal, failed to be as effective as the original injection. Paredrinol is a useful drug in the treatment of collapse caused by the pooling of blood within a dilated venous system. The study suggests, however, that in shock resulting primarily from loss of fluid from the blood stream the drug may not be helpful or it may even be harmful.

Ascorbic Acid Requirement of Man.—In order to determine the amount of ascorbic acid required daily by adults, Ralli and her associates controlled the dietary intake, fed the vitamin quantitatively and determined daily the twenty-four hour urinary excretion of the vitamin of three normal adults, and they correlated this with the plasma concentration at frequent intervals. The results suggest that the optimal daily intake of ascorbic acid in adults should be 100 mg. Ingestion of this amount was accompanied by maximal retention, approximately 90 mg. daily, and by a constant low excretion averaging from 8 to 13 mg. daily. When the amount of ascorbic acid ingested daily exceeded 100 mg., there was a prompt rise in the amount excreted and the excretion continued to parallel any increase in the amount ingested. When the daily feeding of 100 mg. of the vitamin was begun at a plasma level below 1 mg. per hundred cubic centimeters there was a slow gradual rise until this level had been reached. The number of daily doses of 100 mg. required to raise the plasma level depended on the plasma concentration when the feeding was begun. The daily and not the total amount of the vitamin fed was the deciding factor in raising and maintaining a higher plasma level. The results of the studies suggest that in normal individuals a fasting plasma level of 1 mg. per hundred cubic centimeters or over indicates complete saturation of the tissues by ascorbic acid. When less than 100 mg. of the vitamin was fed daily, it was impossible either to raise or to maintain a plasma level of 1 mg. per hundred cubic centimeters. When 50 mg. of the vitamin was given daily, the plasma concentration of ascorbic acid averaged 0.4 mg. per hundred cubic centimeters. As the patients were normal and as there were no symptoms of ascorbic acid deficiency it is suggested that this plasma level be considered the lower limit of normal. At this plasma level, however, the body tissues are not saturated with the vitamin. As tissue saturation can be obtained and maintained only on a daily intake of at least 100 mg. of ascorbic acid it is suggested that this be considered the optimal daily intake.

Dextrose Tolerance After Weight Reduction.—The effect of weight reduction on dextrose tolerance was determined by Hubbard and Beck on thirty-nine formerly obese patients who were brought approximately to normal weight by dietary therapy. No method of selection was used except that patients with diabetic symptoms were not studied. Otherwise, all patients presenting themselves at the clinic whose weight was reduced to an extent considered reasonably satisfactory and on whom the second dextrose tolerance was obtained after weight reduction have been included. Of the thirty-nine patients all but two were women from 25 to 72 years of age (average 44 years). The average time during which the patients took the diet before the tests were repeated was 350 days, with extreme values of 196 and 862 days. During this period they lost between 26 and 110 pounds (11.6 and 50 Kg.). The average weight lost was 58 pounds (26.3 Kg.). The proportion of patients who showed abnormal dextrose tolerance tests before weight reduction was 87 per cent but the degree of abnormality was not marked. After weight reduction 90 per cent of the patients showed some improvement in the test and only 23 per cent showed any demonstrable abnormality. The improvement in dextrose tolerance appeared to be due to the weight reduction rather than directly to the diet, for (1) the change in the curve persisted when the amount of carbohydrate fed was increased, (2) it was of a type which could not be explained readily by the ingestion of diets low in food value and (3) it paralleled roughly the changes in weight.

Journal Industrial Hygiene & Toxicology, Baltimore 21: 439-478 (Nov.) 1939

- Ophthalmic Responsibilities of Industrial Medical Officer. F. Ridley, London, England.—p. 439.
Spectroscopic Analysis of Biologic Fluids for Heavy Metals. D. W. Armstrong and F. S. Brackett, Washington, D. C.—p. 448.
Volatilization of Lead Below 800 Degrees C. P. F. Rezin and P. Drinker, Boston.—p. 461.
Possibilities of Control of Lead Exposure by Examining Less Than Twenty-Four Hour Urine Samples. E. C. Barnes, East Pittsburgh, Pa.—p. 464.
Calibration and Use of Gas Interferometer. F. A. Patty, New York.—p. 469.

Journal of Lab. and Clinical Medicine, St. Louis

25: 113-224 (Nov.) 1939. Partial Index

- *Toxicity of Various Iodine Solutions. A. L. Berman and A. C. Ivy, Chicago.—p. 113.
*Concentration of Vitamin C in Blood During and After Pregnancy. A. Sadovsky, D. Weber and E. Wertheimer, Jerusalem, Palestine.—p. 120.
Magnesium: Effects of Intravenous Injections on Human Heart. M. Bernstein and S. Simkins, Philadelphia.—p. 131.
Cholesterylisis in Blood Plasma of Individuals with Mental Disorders. P. G. Schube, Naomi Raskin and Eleanor Campbell, Boston.—p. 142.
Vitamin A Deficiency: Its Prevalence and Importance as Shown by a New Test. L. B. Pett, Edmonton, Alta.—p. 149.
Effect of Hypothalamic Lesions on Fever Induced by Intravenous Injection of Typhoid-Paratyphoid Vaccine. S. W. Ranson Jr., G. Clark and H. W. Magoun, Chicago.—p. 160.
Relationship of Insulin Hypoglycemic Reaction to Shock. W. C. Corwin, Philadelphia.—p. 169.
Additional Recording Obtained with Oscillatocapacigraph. C. Fenning and B. E. Bonar, Salt Lake City.—p. 175.
Instrument for Obtaining Bone Marrow. G. O. Favorite, Philadelphia.—p. 199.

Toxicity of Iodine Solutions.—Berman and Ivy report studies on the toxicity of some of the iodine solutions used in the preoperative treatment of thyrotoxicosis. They investigated compound solution of iodine (Lugol's), 10 per cent sodium iodide, 10 per cent potassium iodide, Amend's solution and others. Amend's solution is essentially a mixture of sodium iodide and iodine, the "free" iodine being absorbed to a protein precipitable with tungstic acid. The reported studies concern the relative toxicity of various iodine solutions in reference to blood pressure depression, to the emesis point when injected intravenously or when taken orally, to the blood iodine curve, and to their effect in iodine-sensitive patients. They found that the relative toxicity of an iodine solution administered orally, intravenously or percutaneously appears to be related to the presence of the sodium or potassium ion in the solution, to the presence of a buffering agent to neutralize free iodine if the latter is present, and possibly to the amount of protein iodide formed during absorption of orally administered iodine. Amend's solution and sodium iodide are less toxic when given intravenously, are less irritating to the stomach when taken orally, and are better tolerated by iodine-sensitive subjects than compound solution of iodine in iodine-equivalent doses. According to the results of the blood iodine curve and the uptake of iodine by the thyroid, Amend's solution and sodium iodide should be as effective as compound solution of iodine in the treatment of hyperthyroidism when given orally in iodine-equivalent doses.

Vitamin C in Blood During and After Pregnancy.—Sadovsky and his associates point out that, although the quantity of ascorbic acid excreted in the urine after a tolerance test with vitamin C is a widely used indicator of vitamin C deficiency in human beings, it is an open question whether deficiency or absence of reserve vitamin C is an indication of pathologic hypovitaminosis or avitaminosis. They believe that the surest method of determining an actual vitamin deficiency in contradistinction to a mere reserve deficiency is provided by assaying the concentration of vitamin C in the blood. They investigated the concentration of vitamin C in the blood of 322 women. In these the average concentration was found to be 1.01 mg. per hundred cubic centimeters of blood: in 207 pregnant women the average concentration of vitamin C was 1.09 mg.; in sixty-two postpartum women it was 0.79 mg.; in forty-seven nonpregnant women it was 0.98 mg. In severe cases of hyperemesis gravidarum the concentration of vitamin C was consistently low and averaged 0.7 mg. per hundred cubic centimeters of blood. However, this low concentration is believed to be of secondary origin and administration of vitamin C is therefore not a causal therapy. The concentra-

tion of vitamin C in the blood of pregnant women with gingivitis was normal, but when gingivitis was complicated by caries it was slightly below normal. The authors also investigated the concentration of vitamin C in human milk during the first nine days after confinement. They made 147 tests in sixty-two cases and found the average concentration to be 4.62 mg. per hundred cubic centimeters of milk. Beginning from the first day after birth, they detected a continuous increase in the vitamin C content of the milk. The quantity of vitamin C excreted daily in the milk was calculated to be 2.4 mg. on the second day and 27 mg. on the eighth day post partum. The vitamin C concentrations of milk and blood were not found to be definitely correlated. The age of the mother, the number of children previously borne and the weight of the newborn infant do not influence the concentration of vitamin C in the milk and in the blood. The blood concentration of vitamin C after confinement was below normal (less than 0.75 mg. per hundred cubic centimeters) in 50 per cent of the patients examined. In certain patients, values as low as 0.32 mg. per cubic centimeter were encountered. A survey of the concentration of vitamin C in the blood during different months of the year revealed the existence of a markedly higher average during the citrus fruit season.

Laryngoscope, St. Louis

49: 877-1042 (Oct.) 1939

- Ménière's Syndrome. H. Brunner, Chicago.—p. 877.
Use and Effectiveness of Hearing Aids. G. Berry, Worcester, Mass.—p. 912.
Endaural Route. D. E. S. Wishart, Toronto.—p. 943.
Anatomy of Cranial Blood Sinuses with Particular Reference to Lateral. B. Woodhall, Durham, N. C.—p. 966.
Head Noises and Deafness: Peripheral and Central. E. P. Fowler, New York.—p. 1011.
Report of Unusual Bacterial Findings in Fatal Case of Chronic Otitis Media with Complications. H. Newhart, Minneapolis.—p. 1024.
Report of Present Status of Standardization of Hearing Aids. E. P. Fowler, New York.—p. 1031.

Minnesota Medicine, St. Paul

22: 735-806 (Nov.) 1939

- Diagnosis and Treatment of Acute Appendicitis and Its Complications. N. Leitch, Warroad.—p. 735.
*Extreme Cardiac Hypertrophy: Report of Forty-Four Cases in Which the Heart Weighed 800 Gm. or More. E. C. Rosenow Jr. and H. L. Smith, Rochester.—p. 739.
Spontaneous Cure of Acute Regional Enteritis. D. C. MacKinnon, Minneapolis.—p. 744.
Easily Overlooked Conditions of Back and Shoulder Girdle: Their Relation to Physical Therapy. F. H. Krusen and W. C. Basom, Rochester.—p. 746.
Pregnancy and Childbirth Among the North American Indians. J. L. Rothrock, St. Paul.—p. 750.
Intestinal Obstruction, with Statistical Study of Asbury Hospital Cases. C. C. Kennedy and H. J. Hanson, Minneapolis.—p. 757.
Male Hormones. M. H. Hoffman, St. Paul.—p. 767.
*Hypoglycemic Cerebral Damage in Diabetic Patients. J. A. Layne and A. B. Baker, Minneapolis.—p. 771.
Radium Treatment of Certain Rare Benign Conditions. R. E. Fricke, Rochester.—p. 776.

Extreme Cardiac Hypertrophy.—In an attempt to determine the most common causes of marked cardiac hypertrophy, Rosenow and Smith studied the clinical and postmortem records of forty-four cases in which the heart weighed 800 Gm. or more. The forty-four cases can be divided into three main groups, according to the clinical diagnosis: hypertension, chronic endocarditis and a miscellaneous group. There were twenty cases in which a diagnosis of hypertension was made and fifteen cases in which the principal diagnosis was chronic rheumatic endocarditis with deformed cardiac valves. In the miscellaneous group there were two cases in which nothing was found to explain the excessive cardiac hypertrophy except extreme obesity, two had syphilitic aortitis with aortic insufficiency, one had an unusual congenital patent foramen ovale, three had severe coronary sclerosis and one had an adenomatous goiter with hyperthyroidism. Often there was more than one cause for the cardiac enlargement. In thirteen of the twenty cases of hypertension, obesity was present. In the cases of chronic endocarditis more than one valve was usually involved. In six of the nine cases in which more than one valve was involved, chronic adhesive pericarditis was present. Chronic aortic endocarditis appears a more important factor in the production of extreme cardiac enlargement than is hypertension; that is, it produces larger hearts than does

hypertension. The average age of the patients with hypertension was 54.5 years, the average body weight was 200½ pounds (90.9 Kg.) and the average weight of the heart was 831.4 Gm. In the fifteen cases of chronic endocarditis the average age was 45.3 years, the average body weight was 178.3 pounds (80.8 Kg.) and the average weight of the heart was 905.8 Gm.

Hypoglycemic Cerebral Damage in Diabetic Patients.

—With the purpose of emphasizing the dangers of hypoglycemia in diabetes, Layne and Baker report seven cases in which they have no doubt that definite cerebral damage occurred. This has been verified by postmortem studies of the four fatal cases and by clinical observations of those in which recovery occurred. The potential dangers of hypoglycemia are accentuated by the fact that one is unable to predict when such a reaction will occur, since the individual response to insulin may vary from person to person and even within the same individual. With the increasing use of protamine zinc insulin the usual prodromes of incipient hypoglycemia are frequently altered and therefore not recognized by the patient or the family. Knowledge concerning which individuals can and which cannot tolerate a hypoglycemic condition is indefinite. However, one fact stands out, and that is that any associated chronic disease that might affect cerebral tissue (alcoholism, arteriosclerosis or prolonged chronic infection) will tend to make diabetic patients, when hypoglycemia develops in them, much more susceptible to irreversible cerebral tissue changes. In such individuals one must be extremely cautious to avoid even the slightest degree of hypoglycemia and to treat these reactions, if they occur, immediately and adequately. The dangers of hypoglycemia are of more significance in the younger age group, in which death does not always ensue, but the reaction produces permanent cerebral damage with a resulting slow recovery and persisting disabilities in the neurologic and mental spheres. In many of these individuals hypoglycemia develops with little or no alteration in their insulin dosage, the condition is frequently misdiagnosed as diabetic acidosis and the patient is given more insulin. This additional insulin may be just sufficient to produce irreversible changes in an already hypoglycemic brain. In view of the distinct possibility of cerebral damage one must caution against a too hasty administration of insulin to a comatose diabetic patient. Not only should the diabetic individual be instructed in the possible dangers of hypoglycemia but his family and attendants should be educated to recognize the prodromes of hypoglycemia and to appreciate the absolute necessity of employing the proper precautions to prevent the development of a severe reaction. Once the brain tissue has been damaged by hypoglycemia, the return of the blood sugar to a normal or an elevated level appears to have little effect on the course of the illness. Nevertheless a normal or slightly elevated blood sugar level should be maintained during this period, as a great deal of the cerebral change may be reversible and definite improvement may occur.

New England Journal of Medicine, Boston

221: 721-760 (Nov. 9) 1939

- *Nonspecific Treatment of Pneumonia in Infants and Children. F. C. McDonald, Boston.—p. 721.
Significance of Type XIV Pneumococcus Infection and Therapeutic Value of Specific Rabbit Serum for This Type of Pneumonia in Infants and Children. E. C. Curnen, Boston.—p. 725.
Treatment of Pneumococcal Pneumonia in Infants and Children with Sulfapyridine. J. A. V. Davies, Boston.—p. 734.
Further Studies on Personality and Sociologic Factors in Prognosis and Treatment of Chronic Alcoholism. R. Fleming and K. J. Tilletson, Waverley, Mass.—p. 741.
Orthopedic Surgery. M. N. Smith-Petersen, Boston.—p. 745.

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nursing care. Commercial oxygen was used, which for these purposes is just as good as the chemically pure product. A concentration of from 40 to 60 per cent of oxygen in a suitable tent may be maintained for about twenty-four hours with about 300 cubic feet of oxygen. The oxygen of the inspired air was measured at least every two hours. A relative humidity of from 40 to 50 per cent makes breathing easier and permits better drainage of secretions from the respiratory tract. The humidity is generally found to be within the desired range if the temperature in the tent is kept between 75 and 80 F. Under these conditions all clothing may be removed from the chest and abdomen, which permits greater freedom of movement and a better opportunity of observing the respiratory movements. Older children were allowed to assume the position of choice; infants were placed in various positions until the most comfortable one was found. Many children and older infants assumed the knee-chest position. Small infants generally seemed more comfortable lying prone with the head lower than the chest, but some of them breathed more easily in a supine position with the shoulders elevated and the head and neck in partial extension. Removal of tenacious secretion from the upper respiratory tract usually induced peaceful sleep. Morphine sulfate, administered subcutaneously, is the author's choice of sedatives. Morphine used in connection with oxygen therapy usually changes a struggling, frightened child who is not taking enough nourishment to one who is well poised, partially relaxed and eager for food. Fluids should be given in ample amounts. A mixture consisting of one part of physiologic solution of sodium chloride, two parts of fruit juice and three parts of 10 per cent dextrose solution was commonly used. Since this mixture contains food it was usually not given oftener than every four hours, the total amount for twenty-four hours ranging from 500 to 700 cc. Water should be given between feedings to make up a daily fluid intake of from 1,000 to 1,500 cc. Whey and broth were often preferred by the older children. As a source of vitamin A, a concentrated fish oil was given, at least 16,000 international units; this also provided an adequate amount of vitamin D. Fifty international units of vitamin B₁ for each hundred calories in the diet was given, which was double the estimated daily requirement. During convalescence all patients were provided with natural foodstuffs rich in the whole vitamin B complex. One hundred mg. of ascorbic acid was given daily. In the summary the author stresses that in this series of cases the mortality from pneumonia was greatly reduced without the aid of specific chemicals or serums. This does not imply that these specific methods are not of value, for at the author's hospital they are now used in almost every case. It is emphasized that the nonspecific form of treatment is of the utmost importance and should be given consideration in the treatment of pneumonia in infants and children.

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Trends in Practice of Medicine and in Medical Leadership. H. F. Garrison, Jackson, Miss.—p. 1125.

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tion of vitamin C in the blood of pregnant women with gingivitis was normal, but when gingivitis was complicated by caries it was slightly below normal. The authors also investigated the concentration of vitamin C in human milk during the first nine days after confinement. They made 147 tests in sixty-two cases and found the average concentration to be 4.62 mg. per hundred cubic centimeters of milk. Beginning from the first day after birth, they detected a continuous increase in the vitamin C content of the milk. The quantity of vitamin C excreted daily in the milk was calculated to be 2.4 mg. on the second day and 27 mg. on the eighth day post partum. The vitamin C concentrations of milk and blood were not found to be definitely correlated. The age of the mother, the number of children previously borne and the weight of the newborn infant do not influence the concentration of vitamin C in the milk and in the blood. The blood concentration of vitamin C after confinement was below normal (less than 0.75 mg. per hundred cubic centimeters) in 50 per cent of the patients examined. In certain patients, values as low as 0.32 mg. per cubic centimeter were encountered. A survey of the concentration of vitamin C in the blood during different months of the year revealed the existence of a markedly higher average during the citrus fruit season.

Laryngoscope, St. Louis

49: 877-1042 (Oct.) 1939

- Ménière's Syndrome. H. Brunner, Chicago.—p. 877.
Use and Effectiveness of Hearing Aids. G. Berry, Worcester, Mass.—p. 912.
Endaural Route. D. E. S. Wishart, Toronto.—p. 943.
Anatomy of Cranial Blood Sinuses with Particular Reference to Lateral. B. Woodhall, Durham, N. C.—p. 966.
Head Noises and Deafness: Peripheral and Central. E. P. Fowler, New York.—p. 1011.
Report of Unusual Bacterial Findings in Fatal Case of Chronic Otitis Media with Complications. H. Newhart, Minneapolis.—p. 1024.
Report of Present Status of Standardization of Hearing Aids. E. P. Fowler, New York.—p. 1031.

Minnesota Medicine, St. Paul

22: 735-806 (Nov.) 1939

- Diagnosis and Treatment of Acute Appendicitis and Its Complications. N. Leitch, Warroad.—p. 735.
*Extreme Cardiac Hypertrophy: Report of Forty-Four Cases in Which the Heart Weighed 800 Gm. or More. E. C. Rosenow Jr. and H. L. Smith, Rochester.—p. 739.
Spontaneous Cure of Acute Regional Enteritis. D. C. MacKinnon, Minneapolis.—p. 744.
Easily Overlooked Conditions of Back and Shoulder Girdle: Their Relation to Physical Therapy. F. H. Krusen and W. C. Basom, Rochester.—p. 746.
Pregnancy and Childbirth Among the North American Indians. J. L. Rothrock, St. Paul.—p. 750.
Intestinal Obstruction, with Statistical Study of Asbury Hospital Cases. C. C. Kennedy and H. J. Hanson, Minneapolis.—p. 757.
Male Hormones. M. H. Hoffman, St. Paul.—p. 767.
*Hypoglycemic Cerebral Damage in Diabetic Patients. J. A. Layne and A. B. Baker, Minneapolis.—p. 771.
Radium Treatment of Certain Rare Benign Conditions. R. E. Fricke, Rochester.—p. 776.

Extreme Cardiac Hypertrophy.—In an attempt to determine the most common causes of marked cardiac hypertrophy, Rosenow and Smith studied the clinical and postmortem records of forty-four cases in which the heart weighed 800 Gm. or more. The forty-four cases can be divided into three main groups, according to the clinical diagnosis: hypertension, chronic endocarditis and a miscellaneous group. There were twenty cases in which a diagnosis of hypertension was made and fifteen cases in which the principal diagnosis was chronic rheumatic endocarditis with deformed cardiac valves. In the miscellaneous group there were two cases in which nothing was found to explain the excessive cardiac hypertrophy except extreme obesity, two had syphilitic aortitis with aortic insufficiency, one had an unusual congenital patent foramen ovale, three had severe coronary sclerosis and one had an adenomatous goiter with hyperthyroidism. Often there was more than one cause for the cardiac enlargement. In thirteen of the twenty cases of hypertension, obesity was present. In the cases of chronic endocarditis more than one valve was usually involved. In six of the nine cases in which more than one valve was involved, chronic adhesive pericarditis was present. Chronic aortic endocarditis appears a more important factor in the production of extreme cardiac enlargement than is hypertension; that is, it produces larger hearts than does

hypertension. The average age of the patients with hypertension was 54.5 years, the average body weight was 200½ pounds (90.9 Kg.) and the average weight of the heart was 831.4 Gm. In the fifteen cases of chronic endocarditis the average age was 45.3 years, the average body weight was 178.3 pounds (80.8 Kg.) and the average weight of the heart was 905.8 Gm.

Hypoglycemic Cerebral Damage in Diabetic Patients.

—With the purpose of emphasizing the dangers of hypoglycemia in diabetes, Layne and Baker report seven cases in which they have no doubt that definite cerebral damage occurred. This has been verified by postmortem studies of the four fatal cases and by clinical observations of those in which recovery occurred. The potential dangers of hypoglycemia are accentuated by the fact that one is unable to predict when such a reaction will occur, since the individual response to insulin may vary from person to person and even within the same individual. With the increasing use of protamine zinc insulin the usual prodromes of incipient hypoglycemia are frequently altered and therefore not recognized by the patient or the family. Knowledge concerning which individuals can and which cannot tolerate a hypoglycemic condition is indefinite. However, one fact stands out, and that is that any associated chronic disease that might affect cerebral tissue (alcoholism, arteriosclerosis or prolonged chronic infection) will tend to make diabetic patients, when hypoglycemia develops in them, much more susceptible to irreversible cerebral tissue changes. In such individuals one must be extremely cautious to avoid even the slightest degree of hypoglycemia and to treat these reactions, if they occur, immediately and adequately. The dangers of hypoglycemia are of more significance in the younger age group, in which death does not always ensue, but the reaction produces permanent cerebral damage with a resulting slow recovery and persisting disabilities in the neurologic and mental spheres. In many of these individuals hypoglycemia develops with little or no alteration in their insulin dosage, the condition is frequently misdiagnosed as diabetic acidosis and the patient is given more insulin. This additional insulin may be just sufficient to produce irreversible changes in an already hypoglycemic brain. In view of the distinct possibility of cerebral damage one must caution against a too hasty administration of insulin to a comatose diabetic patient. Not only should the diabetic individual be instructed in the possible dangers of hypoglycemia but his family and attendants should be educated to recognize the prodromes of hypoglycemia and to appreciate the absolute necessity of employing the proper precautions to prevent the development of a severe reaction. Once the brain tissue has been damaged by hypoglycemia, the return of the blood sugar to a normal or an elevated level appears to have little effect on the course of the illness. Nevertheless a normal or slightly elevated blood sugar level should be maintained during this period, as a great deal of the cerebral change may be reversible and definite improvement may occur.

New England Journal of Medicine, Boston

221: 721-760 (Nov. 9) 1939

- *Nonspecific Treatment of Pneumonia in Infants and Children. F. C. McDonald, Boston.—p. 721.
Significance of Type XIV Pneumococcus Infection and Therapeutic Value of Specific Rabbit Serum for This Type of Pneumonia in Infants and Children. E. C. Scruton, Boston.—p. 725.
Treatment of Pneumococcal Pneumonia in Infants and Children with Sulfapyridine. J. A. V. Davies, Boston.—p. 734.
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Edinburgh Medical Journal

46: 669-732 (Nov.) 1939

- Surgical Aspects of Treatment of Toxic Goiter: Observations Based on Series of 243 Cases. J. M. Graham.—p. 669.
 Debatable Tumors in Human and Animal Pathology: VIII. Melanoma. E. K. Dawson, J. R. M. Innes and W. F. Harvey.—p. 695.
 If Health Be Wanting. H. H. Roberts.—p. 717.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

46: 813-940 (Oct.) 1939

- Hydatidiform Mole and Chorionepithelioma. A. Brews.—p. 813.
 Double Monsters in Light of Recent Biologic Experiments and Investigations Regarding Heredity: Contribution to Problem of Determination of Sex. B. Szendi.—p. 836.
 Vaginal Hysterectomy: New Technic, Follow-Up of 500 Consecutive Operations for Hemorrhage. V. B. Green-Armytage.—p. 848.
 *Investigation of Cases of Recurrent Abortion and Their Treatment with Progesterone. T. N. MacGregor and C. P. Stewart.—p. 857.
 *Complications of Radium Therapy in Cancer of Uterine Cervix. R. G. Maliphant.—p. 873.
 Some Factors Bearing on Hemoglobin Level in Pregnancy. G. C. Linder and Patricia J. H. Massey.—p. 885.

Progesterone for Recurrent Abortion.—MacGregor and Stewart used progesterone in the treatment of twenty women who had had two or more previous abortions. Prior to this treatment these women had in all sixty-five pregnancies with only ten live births. In no instance could any cause be found for the recurrent abortions—other, that is, than the hormone deficiency revealed during investigation. Of the twenty-two pregnancies during which progesterone was given there were, on the other hand, only eight which ended in abortion, whereas fourteen resulted in a living child at term. The results are in full agreement with those reported by other workers. The use of progesterone therapy in cases of recurrent abortion appears to be warranted. The author has included in the series as "failures" cases in which treatment was not begun until abortion was actually threatening. He believes that if progesterone had been given early enough the proportion of successes would have been increased further. The majority of the failures occurred early in the investigation, when extremely small doses (1 mg. twice a week) of progesterone were being used. More recently the dose has been increased first to 3 mg. and later to 5 or even 10 and 20 mg. twice a week, with intensive therapy in cases of threatened abortion. Even these doses are surprisingly small to be effective, and there is almost an air of the miraculous about the results reported by various observers on doses which are almost infinitesimal in comparison with the amount of progesterone produced in normal pregnancy. The mode of action of progesterone is obscure, but there is no doubt that its presence in adequate amounts is necessary for the maintenance of pregnancy. The simplest explanation of the action of progesterone therapy in preventing abortion would be that it provides, by replacement, an adequate supply of an essential hormone until, whether by its stimulant action on the placenta or by an independent placental development, the deficiency is compensated from natural sources. It may well be, and indeed it is suggested by many facts, that while a temporary deficiency of progesterone does not in itself necessarily lead to abortion it does make abortion an almost inevitable consequence of slight trauma or strain which would otherwise be without effect. A study of the hormone excretion in normal pregnancy has suggested that the critical period when the corpus luteum secretion decreases and the placenta is becoming a secretory organ is near the ninetieth day of gestation. Abortion generally occurs at this time. In recurrent abortion, however, the critical period may be much earlier, as the hormone excretion may be at a subnormal level at a very early stage. Although an injection of a few milligrams of progesterone represents only part of a normal day's production, it gives for a short time an abnormally high concentration of the hormone in the blood. It is possible that this high concentration, repeated at intervals though not lasting long on each occasion, may provide a sufficient extra stimulus to the developing placenta and so enable it to produce a sufficient amount of hormone.

Complications from Radium Therapy in Cervical Cancer.—Maliphant discusses the complications observed in 650 cases of cervical cancer treated with radium. Therapy was associated with a primary mortality of 2.6 per cent, and the

commonest cause of early death was peritonitis. Inflammatory sequels were more common with the cavity technic of irradiation, for which it is suggested that the employment of a uterine tube is at least partly responsible. Postradiation pyometra occurred in 1.25 per cent, usually in older women. In 1.6 per cent intestinal obstruction developed, as the result in all cases of malignant involvement of the intestine. The incidence of fistulas five years after irradiation was 11 per cent. Their formation was usually a manifestation of advanced disease, and factors which predisposed to its occurrence were an ulcerative lesion, anaplastic histologic pattern, interstitial radium, heavy dosage and repeated treatment. The adoption of the cavity technic resulted in a substantial decrease in the incidence of fistulas. The risks of radium therapy are small in moderately early cases of cancer, but when the cancer is extensive careful consideration is required.

Lancet, London

2: 969-1012 (Nov. 4) 1939

- Future of Cardiac Surgery. L. O'Shaughnessy.—p. 969.
 *Bacillus Coli Infection of Urinary Tract: Its Relation to Bowel Function. A. W. D. Leishman.—p. 971.
 *Effect of Estrogens on Urinary Volume. E. P. Sharpey-Schafer and I. Schrire.—p. 973.
 Neutralization of Action of Heparin by Protamine. E. Jorpes, P. Edman and T. Thanning.—p. 975.
 Artificial Pneumoperitoneum in Pulmonary Tuberculosis and Pregnancy. Josephine Barnes.—p. 976.
 Angina in Aleukemic Leukemia. J. B. L. Tomblinson.—p. 977.
 Analysis of Normal T Wave. A. Hill.—p. 979.
 Expectant Treatment of Gas Gangrene. H. A. Brittain.—p. 981.

Bacillus Coli Infection of Urinary Tract.—According to Leishman, the coliform group of organisms is responsible for from 70 to 80 per cent of cases of urinary infection, a fact which is usually explained by the proximity to the urinary tract of the bowel as a reservoir of infection. How the organisms migrate is still far from clear. There is no doubt that the route of infection varies in individual cases. The clinical impression is that bowel dysfunction, especially constipation, is not uncommonly a factor in these cases. The observations here recorded were made in an attempt to establish more definitely whether such relationship does exist or not, and if so what type of bowel irregularity is especially to be incriminated. The first series of cases was a control group to discover whether urine obtained with due precautions from a normal person contains *Bacillus coli* which can be recovered by urine culture. From all the female subjects specimens of urine were obtained by catheter, the first few cubic centimeters of the sample being rejected as being urethral washings. In male subjects a midstream specimen was used. The culture technic used for these observations allows the detection of coliform organisms even if present in minimal numbers. Further, the author examined the urine of persons with constipation, with persistent loose stools and with temporary diarrhea due to laxatives and finally he searched for *Bacillus coli* in the urethra of healthy persons. He says that it is difficult to assess the significance of the presence of *Bacillus coli* in the urine of seven of the 100 control persons. It is to be noted that there was no excess of white blood cells in the centrifuged deposit of the urine of any of these cases, and that of the cases reexamined all were subsequently negative without treatment having been given in the meantime. It is possible that healthy persons excrete coliform organisms in the urine from time to time, and that this slight symptomless bacilluria may develop into a clinical infection if the bodily resistance is lowered or the virulence of the organism increased. However this may be, it is clear that a positive urine culture alone is not necessarily evidence of a clinical infection of the urinary tract with *Bacillus coli*. The proportion of positive cultures in the series of persons suffering from constipation and in the series given excessive laxatives is so similar to the proportion of positive cultures in the control group that it seems justifiable to conclude that 6.2 per cent of positive cultures is within the limits of normal health. This figure contrasts with nineteen positive cultures obtained from the urines of thirty-six female subjects with persistent loose stools. The absence of positive cultures from the group of male subjects with diarrhea is in striking contrast to the observations in the female subjects. It is suggested that this difference in the two sexes is due to the close

anatomic relation of the anus to the external urethra meatus in the female. The author concludes that persistent loose stools are an etiologic factor in *Bacillus coli* infections of the urinary tract of female but not of male subjects and that constipation alone is not a factor.

Effect of Estrogens on Urinary Volume.—Sharpey-Schafer and Schrire say that it was recently asserted by Shapiro (1938) that the injection of estrogens into women caused a diminution of urinary volume, and in explanation of these results it was suggested that the estrogens depressed a diuretic principle of the anterior pituitary. In the course of observations on the effect of the injection of large doses of the estrogens on the urinary creatinine of normal subjects, subjects with acromegaly, and castrate and menopausal women, the authors have studied the urinary output and have not detected any change in volume after the injection of estrogens. Since the fluid intake was only roughly controlled in many of these subjects, a more elaborate experiment has been performed. The subjects investigated were all in the hospital at rest in bed. Each subject was put on a rigidly fixed diet. The water and salt content of the diet was known and was suited to each patient's needs. Extra water was measured and kept at a constant daily amount. Great care was taken that the subject took nothing outside the diet. Care was also taken in the collection of urine; mistakes, which were not uncommon, were reported, and the urine for that day was discarded. The twenty-four hour urinary volume was measured by one of the authors. Estrogens were given in the form of estradiol benzoate; 100,000 international benzoate units were injected intramuscularly once daily and the period of injection was ten days. This dose is similar to that used by Shapiro. Fourteen subjects were investigated. After the injection of estrogens no change could be detected in the urinary volume of women before and after the menopause, of castrate women or of men.

Practitioner, London

143: 461-572 (Nov.) 1939

- Gastrointestinal Diseases. A. H. Douthwaite.—p. 461.
Diseases of Heart and Blood Vessels. M. Campbell.—p. 474.
Respiratory Diseases. G. Marshall.—p. 484.
Nervous Diseases. M. Critchley.—p. 491.
Tropical Diseases. N. H. Fairley.—p. 496.
Endocrine Therapy. S. L. Simpson.—p. 502.
Orthopedics. G. Perkins.—p. 510.
Rectal Diseases. C. N. Morgan.—p. 515.
Genito-Urinary Diseases. E. W. Riches.—p. 528.
Anesthesia. R. R. Macintosh.—p. 539.
Electrotherapy and Physical Methods of Treatment. A. Eiflinow.—p. 550.
Radiotherapy. F. M. Allchin.—p. 555.
Modern Therapeutics: V. Stimulant Drugs. Eleanor M. Scarborough.—p. 561.

Quarterly Journal of Medicine, Oxford

S: 277-384 (Oct.) 1939

- Simmonds's Disease Due to Postpartum Necrosis of Anterior Pituitary. H. L. Sheehan.—p. 277.
*Experimental Leukocytosis in Man. N. G. Nordenson.—p. 311.
Atypical Hemolytic Anemias. F. G. Lescher and G. R. Osborn, with technical assistance from J. J. G. Bates.—p. 335.
Nature of Arteriolar Hypertonicity in Acute Glomerulonephritis. W. M. Arnott and G. D. Matthew.—p. 353.
*Study of Some Serum Electrolytes in Hypertension. O. L. V. S. de Wesselow and W. A. R. Thomson.—p. 361.

Experimental Leukocytosis in Man.—Nordenson observed the effects of sodium nucleinate, pentnucleotide and adenine sulfate on the peripheral blood and the bone marrow in fifty-nine experiments on forty-three patients. Experiments with adenine sulfate were meager. The patients were normal subjects with secondary anemias and mild infections without a shift to the left in the Arneith-Schilling count, normal subjects with secondary anemias and mild infections with a shift to the left, patients with severe acute infections without anemia or leukopenia but with a pronounced shift to the left, and patients with pernicious anemia in relapse of remission. In addition, prolonged observations and injections have been carried out on a patient with tuberculosis coxitis showing slight secondary anemia without a shift to the left. The subjects described as normal were average hospital patients suffering from ulcers, cardiac disease with slight failure, arteriosclerosis and various forms of psychosis. The secondary anemias were due to nephritis, cancer, infections, anemia after hemorrhage and some cases of essential hypochromic anemia. Both sodium nucleinate and pentnucleotide

induced a continuing peripheral neutrophil leukocytosis, with hastened maturation of the granular cells of the bone marrow, but only if the bone marrow had been damaged previously. If damage to the bone marrow occurred previously, in infections and in the relapses of pernicious anemia, neither of these changes took place. In the few experiments with adenine sulfate no changes in the peripheral blood were observed. Thus as long as the bone marrow had relatively intact stores of myelocytes, peripheral leukocytes were produced and maintained. Otherwise, in severe infections and in relapses of pernicious anemia the alterations in the peripheral blood become aggravated by leukopenia and pronounced shift to the left.

Serum Electrolytes in Hypertension.—De Wesselow and Thomson determined the sodium, potassium and calcium of the serum of patients with hypertension and normal subjects (both groups having been kept on a ward diet for one week before investigation) and the effects, if any, of artificially produced changes of the serum sodium and potassium on the hypertension. With the exception of one instance of malignant hypertension, the subjects studied were unselected and taken as admitted. On the basis of their observations the authors state that such changes as occur in the blood pressure of hypertensive patients from the addition of amounts of potassium and sodium salts to the diet, which would be unlikely to be selected voluntarily by a patient, are relatively insignificant. Broadly speaking, the addition of considerable quantities of sodium to the diet in the form of citrate and chloride produces a rise in the blood pressure of such patients, while the addition of potassium salts produces a fall. Assuming that the raised blood pressure in essential hypertension is dependent on a raised tonus of the peripheral vessels, it is questionable whether the changes observed are necessarily dependent on a change in such tonus. Two other factors must be considered, changes in the blood volume and the possible effect of these two ions on the heart. With sodium dosage the estimations suggest that a definite hemodilution occurs, which is accompanied by a gain in weight, and conversely with potassium such few observations as have been made suggest slight hemoconcentration with loss of weight. Though, in the normal subject, changes in blood volume are readily compensated by corresponding adjustments of the vascular bed, it is possible that these mechanisms are impaired in the hypertensive state. Regarding the force of the cardiac contraction there can be no doubt that in the case of potassium a rise of this ion in the serum is associated with changes in the electrocardiogram suggestive of alterations in ventricular function. This is well shown in the crises of Addison's disease, in which a change in the electrocardiogram, in the shape of an increase in the height of the T wave, is observed. This develops with the accumulation of potassium in the serum. In Addison's disease this alteration in the electrocardiographic complex is not necessarily associated with a fall in the serum sodium, and in the hypertensive patients in whom it was present it developed with a normal serum sodium content. This change in the electrocardiogram is not believed to be associated with any change in the blood pressure. In the rapid changes in the serum potassium and sodium which occur in this disease, a considerable fall in the serum potassium with corresponding changes in the electrocardiogram has been observed, which produced no rise in the blood pressure. Similarly, the variations in serum sodium are only roughly parallel to the height of the blood pressure, though the blood pressure has never been restored to a fully normal level in Addison's disease unless the serum sodium level was above 320 mg. per hundred cubic centimeters. There is no evidence that the slight falls in blood pressure which occurred in the hypertensive patients on potassium medication are due to a central action on the heart, since in Addison's disease the changes in the electrocardiogram due to accumulation of potassium in the blood are not necessarily associated with a fall in pressure. If the possible central action of potassium on the force of the cardiac contraction is ruled out, such small changes in pressure as were observed might be due either to changes in the peripheral tonus or to oligemia. In the case of the sodium salts, no changes in the electrocardiogram were present and therefore there is no indication that such small changes in the serum sodium as were produced exercised any effect on the heart beat.

lows: 5, 3.75, 2.5, 1.5, 1, 0.75, 0.5, 0.25 and 0.05 per cent. To 1 cc. of each of these solutions is added 0.4 cc. of cerebrospinal fluid. After cooking for fifteen minutes, the result is read. The authors describe the various intensities of flocculation and say that the flocculation curves are differentiated into normal, doubtful to weak positive and positive types. They further determined whether under the conditions of the heat coagulation the determination of the electrolyte threshold was possible and of diagnostic value. They found a "refined" series with decreasing concentrations from 0.125 to 0.05 per cent of calcium chloride suitable for this purpose. Each of the sixteen tubes of the refined series differed by 0.05 per cent. The refined series has the disadvantage that comparatively large quantities of cerebrospinal fluid are required. Nevertheless, the authors employed it in thirty-eight cases and to a certain extent found it practical. Further they summarize the diagnostic value of the heat coagulation on the basis of 120-tests. The sugar and sodium chloride contents of the cerebrospinal fluid showed no parallelism to the outcome of the heat coagulation test. In all spinal fluids in which the coagulation test gave definitely pathologic curves the cell count and Pandy's reaction also indicated pathologic conditions and Nonne's reaction did so in the majority of cases. Thus the heat coagulation test corroborates the fact that pathologic changes exist in the spinal fluid. The intensity of the flocculation and the number of test tubes in which it is observable are a measure of the severity of the changes in the cerebrospinal fluid. In cases in which only the cell count is slightly increased the pathologic outcome of the heat coagulation test may be of value, for in these cases it is slightly more sensitive than the other protein reactions.

Sovetskiy Vrachebnyy Zhurnal, Leningrad

Aug. 15, 1939 (No. 15) Pp. 769-816. Partial Index

- Regarding Homeopathy. M. V. Chernorutskiy.—p. 769.
Dynamics of Venous Pressure in Tuberculous Patients. A. Ya. Tsigelnik and S. P. Geffer.—p. 775.
*Simple and Accessible Method of Investigating Dysphagia. G. S. Belenkiy.—p. 785.
Neurotic Component in Pathogenesis and Therapy of Polyarthritis. O. I. Solntseva.—p. 789.

Simple Method of Diagnosing Dysphagia.—Belenkiy emphasizes the inadequacy of the anamnesis and of the subjective symptoms for the differential diagnosis of the nervous spastic and the organic dysphagia. The x-ray method of investigation is to be employed first, since it is capable of revealing false passages, diverticula, aortic aneurysms and inflammatory conditions of the mediastinum—conditions which constitute contraindications to the methods of investigation by the passage of sounds, bougies and the esophagoscope. The early stages of neoplastic, ulcerative or inflammatory processes may escape the x-ray investigation but may be readily discovered with the aid of the esophagoscope. The method, however, works hardships on the patient and is not to be recommended for use by the general practitioner. The author proposes for the use of the general practitioner an auscultatory method of differentiation between a functional spastic and organic disease of the esophagus. The method takes advantage of the fact established by roentgenologists that the time required by the second phase of deglutition, that of the passage of food through the esophagus and the cardia, amounts to from two to ten seconds. Meltzer had established that auscultation at the base of the xiphoid cartilage yields two tones following the swallowing of fluid. The first is caused by the contraction of muscles of deglutition, the second louder and longer sound by the passage of fluid through the cardia. The time interval between the two corresponds to the arrest of food or fluid above the closed cardia and consumes from six to seven seconds. Retardation to from twelve to twenty seconds was considered of diagnostic value by Ewald. The author studied the "tonal phenomenon" of twenty-five normal persons. Distinct and constant sounds were heard best when from 20 to 25 cc. of water at room temperature was swallowed. The patient is asked, in addition, to go through the act of deglutition four times at one minute intervals. A study of sixty patients demonstrated the absence of the second sound when the cardia is impassable because of a neoplasm. The author was able to establish two types of a "phonogram," normal and stenotic. The normal consists of a short first sound followed from six to eight seconds later by a somewhat longer sound.

Repeated tests of the same person give constant results. The stenotic phonogram is characterized by a prolongation of the interval to from twelve to fifteen seconds as well as by irregular retardation following the supplementary deglutitions. The latter are due to spastic contractions of a neurogenic type above an obstruction of organic character. In dysphagias on a nervous functional basis the retardation of the second sound is less pronounced.

Acta Medica Scandinavica, Stockholm

102: 277-448 (Nov. 4) 1939. Partial Index

- Symptomatic Sprue. H. A. Salvesen and M. Kobro.—p. 277.
Clinical Aspects of Various Types of Congenital Cystic Lungs in Adults. T. Bruce.—p. 295.
Pneumonia in Adults and Children Treated with 2(Para-Aminobenzenesulphonamido) Pyridine. A. Eldahl.—p. 324.
*Experimental Investigations on Hodgkin's Disease (Gordon's Test). H. Schreiber.—p. 357.
Increasing Citrate Metabolism in Vitro by Salicylic Acid. N. Alwall.—p. 390.
Treatment of Bronchial Asthma by Acro-Ionotherapy. A. L. Tchijevsky.—p. 396.
*Creatinuria in Thyrotoxicosis. K. Brøchner-Mortensen and E. Møller.—p. 417.

Experimental Investigations on Hodgkin's Disease.—Schreiber made studies in five cases of Hodgkin's disease. In only two of the five cases was Gordon's test positive, and in these two cases the test was atypical in that the symptoms which developed in the rabbits differed considerably from those described by Gordon. In one of the positive cases the course was mitigated and in the other one it was peracute. The fact that in three of five cases the results of the tests were negative seems to indicate that it has no diagnostic significance; however, the convincing results obtained by other investigators suggested to the author that accident played a part in this small series of negative results. He reaches the conclusion that only the positive outcome of the test is reliable. The positive outcome of Gordon's test has its greatest diagnostic significance in incipient cases of Hodgkin's disease in which the histologic diagnosis is as yet impossible. The negative outcome of Gordon's test makes the absence of Hodgkin's disease only probable but not certain. If in suspected cases Gordon's test is negative, it should be repeated on a larger number of animals. If possible, lymph nodes with an earlier stage of the disease should be used for examination.

Creatinuria in Thyrotoxicosis.—Brøchner-Mortensen and Møller point out that creatinuria appears in various disorders, such as reduced or abolished testicular or ovarian function, disorders giving rise to changes in the musculature, carcinoma, hepatic cirrhosis, cardiac insufficiency, diabetes mellitus and thyrotoxicosis. Shaffer in 1907 demonstrated that many patients with exophthalmic goiter excreted considerable quantities of creatine in the urine, while the creatinine excretion was at the same time rather low. This observation was later substantiated by numerous authors. In patients with myxedema the urine generally does not contain creatine, but thyroid treatment gives rise to creatinuria, which in the majority of cases appears before the increase in the basal metabolic rate. Thyroid treatment of normal persons likewise elicits a considerable creatinuria. The authors report the results of examination in thirty-nine cases of exophthalmic goiter and in twelve cases of thyrotoxic adenoma. In these fifty-one cases of thyrotoxicosis they found no proportionality between the basal metabolic rate and the amount of creatine and creatinine in the urine. Prior to iodine treatment an increased creatine excretion was found in twenty-five of forty-one cases. After iodine treatment a decrease in the creatinuria was found in nine of forty cases. During one or several periods of roentgen treatment of thirteen patients no change was found in the creatinuria. During the time immediately after subtotal strumectomy the creatine excretion was found to be of the same magnitude as prior to the operation. The authors conclude that the determination of the amount of creatine and creatinine in the urine has no practical importance in the clinical examination of patients with thyrotoxicosis.

CORRECTION

Cysteine Hydrochloride.—In the Dec. 16, 1939, issue of THE JOURNAL, page 2268, the word "cysteine," in an abstract of an article by Putnam and Hoefer, from the *American Journal of the Medical Sciences*, was inadvertently spelled "cystine."

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INJURY OF THE URETER

DUE TO SURGERY, INTRA-URETERAL INSTRUMENTATION,
EXTERNAL VIOLENCE AND FOREIGN
BODIES: REPORT OF FIFTY CASES

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After a comprehensive study of the medical literature dealing with the problem of injury of the ureter we are able to state that there has been a unanimity of opinion in the past few years with regard to the frequency of ureteral injury. The present agreement is due essentially to recognition of the pathologic lesion.

Our approach to the subject has been, first, through a comprehensive review of all medical literature, especially that of the past twelve years; secondly, through a summarizing and abstraction of our clinical material, and, thirdly, by securing a classification of ureteral injuries into four important groups. We find that the incidence of injury increases from the groups of injury due to foreign bodies and to external violence, which are relatively rare, to a greater number caused by intra-ureteral instrumentation and finally to the largest group, injuries of the ureter due to surgical procedures on the organs of generation of the female, the general abdominal viscera, the kidney, the ureter and the bladder.

Our classification (table 1) in a few respects parallels the efforts of others; however, on close observation its contents present a spectacular arrangement of traumatic possibilities that have been obtained either from the literature or from our hospital survey. In an occasional instance, possibilities have been classified that have not been found in either of the two sources, and the rationale of their inclusion here will be given.

SURGICAL INJURY OF THE URETER

The majority of instances of injury of the ureter occur during operative treatment of the organs of generation in the female. These injuries harass even the most accomplished and experienced surgeons.

The ureters are placed in constant danger during hysterectomy because of the close anatomic relationship between the uterus and the pelvic portion of the renal duct. As the ureter enters the parametrium, it comes in close proximity to fibroid tumors or intraligamentous cysts, and because of its lack of fixation the ureter may be displaced by extension, rotation or irregularity of

these masses. Chronic inflammatory disease increases the anatomic distortion. Moreover, the uterine artery, as it crosses the ureter near the urinary bladder, is separated by the short distance of 2.5 cm. Engel³ emphasizes this intimate relationship in his comments on failure to obtain hemostasis with a clamp. The artery retracts and the surgeon is obligated to place the clamps deeply and laterally into the vicinity of the ureter. Great care should be exercised in placing transfixion sutures, and by all means these should consist of absorbable material. This recommendation is illustrated as follows:

C. M., a woman aged 40, was diagnosed as having a cystocele, descensus uteri and fibrosis uteri. On April 21, 1939, an abdominal subtotal hysterectomy was carried out. The uterosacral and pubocervical ligaments were approximated posterior to the cervix with five interrupted linen sutures. There was complete anuria for the next thirty hours. At this time the value for nonprotein nitrogen was 36 mg. per hundred cubic centimeters of blood. Cystoscopic examination, ureteral catheterization and a roentgenogram revealed bilateral occlusion of the pelvic portions of the ureters (fig. 1). On the first postoperative day the gynecologist had reopened the abdominal wound and succeeded in removing four of the five linen sutures, while the cystoscopist attempted to catheterize the ureters. Eventually one catheter was introduced with difficulty up the left ureter. The patient died on April 29 (the eighth postoperative day). The necropsy revealed bilateral ureteral occlusion by the one remaining ligature of linen material; the obstruction had not been relieved during the secondary operation of deligation (fig. 2).

Extraperitoneal surgery and allied procedures have played a spectacular, although rather infrequent, role in the causation of ureteral trauma. Therapeutic or criminal abortion has been reported by Müller,⁵ Israel,⁶ Ottow⁷ and Harris.⁸

Instrumental delivery as a causative factor in ureteral injury has been reported by Webb-Johnson.¹ In twenty-three years he had twenty-three cases of ureterovaginal fistula. All except one were the result of pelvic surgery. This one "followed difficult parturition, protracted labor and instrumental delivery." Kramer's⁹ patient had been delivered of a large infant, 6,000 Gm. in weight and 61 cm. in length, by forceps at home. The wall of the bladder, in the ureteral area, was destroyed by necrosis. Kramer concluded that during the forceps maneuver a stone in the pelvic ureter was crushed and destroyed the ureter.

In instrumental delivery, breech extraction or, presumably, "normal" parturition, deep cervical laceration may occur. The ureter may be injured directly or be included in sutures for repair.

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Read before the Section on Urology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of many of the case histories and illustrations. The complete paper appears in the authors' reprints.

3. Engel, W. J.: *Ohio State M. J.* 23: 862-865 (Aug.) 1937.

5. Müller, G.: *Zentralbl. f. Gynäk.* 56: 331-334 (Feb. 6) 1932.

6. Israel, W.: *Zentralbl. f. Gynäk.* 54: 1096-1099 (May 3) 1930.

7. Ottow, B.: *Zentralbl. f. Gynäk.* 52: 3072-3075 (Dec. 1) 1928.

8. Harris, A.: *Am. J. Surg.* 8: 801-809 (April) 1930.

9. Kramer, K.: *Zentralbl. f. Gynäk.* 62: 526-528 (March 5) 1938.

The general surgeon has encountered pathologic processes within the peritoneal cavity which on surgical extirpation have been responsible for ureteral trauma. In the main these lesions have involved the sigmoid, rectum and vermiform appendix. Brenizer,¹¹ in his discussion of Engel's paper,³ mentions the possibility of ureteral injury during the abdominal stage of an abdominoperineal resection of the rectum. He continues with the assertion that "some of us have probably ligated a single ureter, but, as the kidney has silently and considerably atrophied, we have been saved the embarrassment of knowing it." Marino and Veppo¹² reported a case of ureteral injury following appendectomy.

Occasionally, during the conduct of an operative procedure on the kidney or ureter, the urologic surgeon will tear, cut, puncture or clamp the ureter accidentally. These instances of trauma are associated generally with marked perirenal and periureteral inflammation or old scar tissue formation. Complete solution of ureteral continuity during an operative procedure intended to represent conservatism is distressing. In operating on

from multiple attempts of ureterolithotomy has necessitated nephrectomy. Occasionally the removal of a diverticulum¹⁴ or an area of carcinoma¹⁵ of the urinary bladder is attended with ureteral injury. Correction of the traumatized ureter is obtained by ureterovesical anastomosis.

The primary type of ureteral injury consists of division (partial or complete), ligation, crushing by clamp,

TABLE 1.—Classification of Ureteral Injury

I. Surgical injury	
A. Female genitalia (gynecologist or obstetrician)	
1.	Hysterectomy (vaginal or abdominal), salpingo-oophorectomy, hysterectomy, uterine suspension: for carcinoma, fibroids, cyst or tumor (especially intraligamentous), chronic pelvic inflammatory disease, cesarean section, proclitelia.
2.	Forceps or breech delivery, abortion, colporrhaphy, perineorrhaphy, prolonged use of pessary.
B. Abdominal viscera (general surgeon)	
1.	Sigmoid and rectum: especially for carcinoma.
2.	Vermiform appendix.
3.	Inguinal hernia: ureter in sac.
C. Genito-urinary system (urologist)	
1.	Kidney and ureter: tear, cut, suture, puncture, clamp, trauma with stone, forceps.
2.	Bladder: diverticulectomy or resection for carcinoma.
II. Cystoscopic injury	
A. Catheterization	
1.	Simple introduction for renal study: hematuria or clot protrusion from orifice.
2.	Indwelling catheter for therapeutic drainage.
3.	Perforation by catheter at site of obstruction: calculus, stricture or kink in diseased ureter.
4.	Longitudinal splitting by buckling, distal to obstruction.
5.	Knottling or bending of catheter in ureter.
B. Instrumentation	
1.	Perforation by catheter, catheter containing stylet, bougie, whale bone, Howard spiral stone dislodger, Johnson ureteral stone basket, etc.
2.	Breaking of any instrument, such as Howard spiral stone dislodger.
3.	Detachment of threaded filiform tip from stone basket.
C. Ureterography: factor in combination with catheterization injury—obstruction, diseased ureter, pressure, perforation.	
III. External trauma	
A.	Gunshot, grenade, shell, etc.
B.	Stab wound.
C.	Major trauma of skeletal structures and viscera.
IV. Foreign bodies	
1.	Pipe stem, straw, pin, wire, spiral shell, bullet.
2.	Filiform, ureteral catheter, stone extractor.
V. Miscellaneous	
A.	Perforation, during catheterization, of a ureter that had been transplanted to the skin.
B.	Radium: cervix or prostate.

the remaining kidney of a boy, aged 12 years, Napalkoff¹³ stated that the ureter separated from the renal pelvis in his fingers and he carried out the procedure of reimplantation into the pelvis. At times, various types of stone forceps exert a destructive influence on the ureteral mucosa and result in the formation of ureteral stricture. Moreover, sutures that enter the lumen or reduce the normal caliber of the ureter may result eventually in loss of renal substance. Ureteral damage



Fig. 1.—Appearance after ureteral catheterization, illustrating bilateral ureteral occlusion as a result of pelvic surgery.

removal of a segment, puncture or cauterization; the secondary type, of partial occlusion or angulation by periureteral adhesions. One or both ureters may be traumatized. Prevention of injury by preoperative introduction of ureteral catheters has been advocated by Engel,³ Sisk,¹⁶ and others. The catheter is quite readily palpated and assists materially in avoiding many unnecessary complications. Sisk reported that in the department of gynecology at the Wisconsin General Hospital preoperative ureteral catheterization in cases considered to be difficult surgical problems, has been a routine procedure for many years. As a result, only one ureter has been damaged, and in this instance difficult and unexpected pathologic lesions were encountered. The recommendation of preoperative ureteral catheterization is worthy of emphasis by repetition.

The treatment of a traumatized ureter is dependent on the time of recognition of the injury, the type of injury, the location of the injury and the condition of the patient. Curtis¹⁷ advises that, if the severed ureter is recognized at the time of operation, "restitution of function . . . appears indicated" if the operation will not be hazardous. When the proximal portion is of sufficient length to prevent tension, the ureter should be implanted into the bladder. This has been advocated

11. Brenizer, A. G.: *South. Surgeon* 6:405-406 (Oct.) 1937.
12. Marino, H., and Veppo, A. A.: *Arch. argent. de enferm. d. ap. digest. y de la nutrición* 11: 107 (Dec.) 1935, 114 (Jan.) 1936.
13. Napalkoff, N.: *Vestnik khir.* 12: 3-9 (No. 34) 1927.

14. Rusche, C. F., and Bacon, S. K.: *Urol. & Cutan. Rev.* 42:166-168 (March) 1938.

15. Chute, A. L.: *New England J. Med.* 209: 219-222 (Aug. 3) 1933.

16. Sisk, I. R.: *Surg., Gynec. & Obst.* 60: 857-860 (April) 1935.

17. Curtis, A. H.: *Surg., Gynec. & Obst.* 48: 320-323 (March) 1927.

by Beer,¹⁸ Pugh¹⁹ and others, and Chaffin's²⁰ technic is notable for its simplicity.

When the conduit has been cut at a distance too great for vesical implantation the repair, with submucosal interrupted sutures of fine material, should be made over a ureteral catheter that has been introduced up into the renal pelvis and down into the bladder. Postoperatively the distal end is removed by the cystoscope for external drainage. Final removal of the catheter should not take place before the eighth or tenth postoperative day and preferably not before a longer period of time.

When the abdominal operation has been hazardous and prolonged, to the extent that the patient's condition has drifted into an unsatisfactory state, prompt ureteral ligation has been advised by numerous surgeons who have been fully aware of the destruction of kidney substance. Barnes²² warns of the danger of ligation in the presence of renal infection. When this situation is encountered, rapid ureterocutaneous anastomosis is to be considered because drainage is of paramount importance to insure a favorable convalescence. It seems unnecessary to point out again the importance of determining, by palpation, the presence of an upper urinary tract on the opposite side before ligating a severed ureter. An additional investigation, which requires but a few minutes, is that of intravenous injection of indigo carmine. Its appearance can be observed in the drain-

implanted into the bladder or its ends cannot be reunited without tension, uretero-intestinal anastomosis is advocated.

The recognition of ureteral injury postoperatively is of serious import when both ureters have been ligated. The presenting symptom is anuria and the result is fatal if the condition is not relieved. Several authors previously acknowledged and Day,²³ Cabot,²⁴ Slutsky²⁵ and

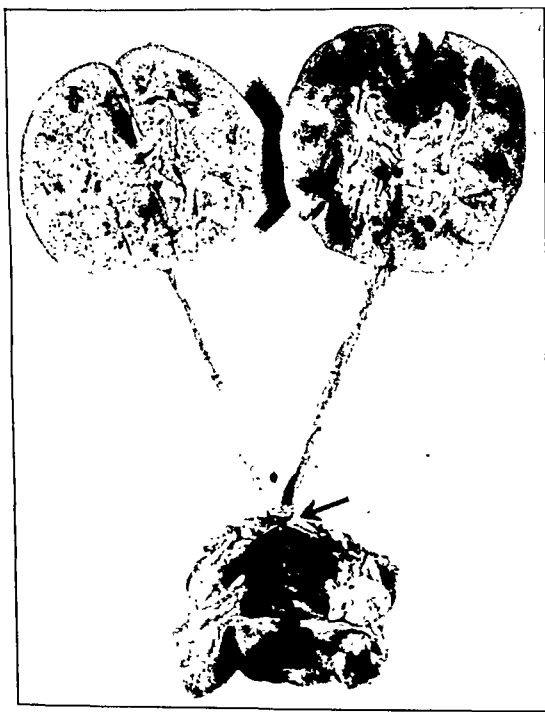


Fig. 2.—Necropsy specimen. The two ureters are obstructed in one ligature of linen material.

age from the ureteral catheter, most commonly introduced preoperatively, while wound closure is being carried out.

Occasionally in the course of pelvic surgery the ureter is observed to be distended. Search for a ligature or clamp is advised and usually requires only removal of the obstructing factor. If a segment has been removed to such an extent that the ureter cannot be



Fig. 7 (case 7).—Vesical implantation of left ureter three months after complete division. Observe medial insertion and normal pyelo-ureterogram.

others have emphasized the value of nephrostomy. Rapid bilateral nephrostomy is a noteworthy procedure to conserve renal parenchyma. Deligation is to be condemned. The distortion of anatomic structures, presence of plastic exudate and possibility of hemorrhage preclude this method of repair. Unilateral ureteral injury, recognized postoperatively by the presence of urinary fistula, necessitates the consideration of ureteral repair, vesical or intestinal implantation, nephrostomy or nephrectomy. If the ureteral continuity is not entirely destroyed, interval dilation by catheter or bougie may preserve the function of the affected kidney and ureter.

We present the pertinent clinical details of nine cases of ureteral injury following surgical procedures on the female genitalia, three cases following general abdominal surgery and three cases following renal and ureteral surgery. These records represent a selection of cases from our survey of the problem of ureteral trauma occurring in the Los Angeles County General Hospital since Jan. 1, 1928 (table 2).

CASE 7.—G. J., a woman aged 41, who was diagnosed as having fibroid uterus, had an abdominal panhysterectomy performed Feb. 25, 1935. The postoperative drainage from the vagina and abdominal wound had a uriferous odor. On cystoscopic examination the right ureter was catheterized read-

18. Beer, Edwin: *Am. J. Obst. & Gynec.* 33: 1041-1049 (June) 1937.
19. Pugh, W. S.: *Am. Med.* 41: 227-230 (April) 1935.
20. Chaffin, R. C.: *Am. J. Surg.* 31: 484-488 (March) 1936.
22. Barnes, R. W.: *Urol. & Cutan. Rev.* 41: 853-856 (Dec. 1) 1937.

23. Day, R. V.: *Uremia Following Ligation of Both Ureters in the Course of a Hysterectomy*, J. A. M. A. 99: 1942-1943 (Dec. 3) 1932.
24. Cabot, Hugh: *Proc. Staff Meet., Mayo Clin.* 9: 125-128 (Feb. 28) 1934.
25. Slutsky, N.: *Am. J. Obst. & Gynec.* 31: 1045-1047 (June) 1936.

ily but the catheter was obstructed in the left ureter at 1 cm. On June 3, 1935, the left ureter, which had been cut, was sutured into the bladder wall posteriorly. The operative result was satisfactory. On September 4, roentgenograms revealed the medial insertion of the ureteral transplant. Each ureter was catheterized without difficulty. Normal conditions were observed on several later occasions (fig. 7).



Fig. 10 (case 11).—Marked ureteral stricture and moderate hydronephrosis following complete division and immediate repair of ureter during appendectomy.

CASE 11.—J. E., a woman aged 53, diagnosed as having acute appendicitis, was operated on Sept. 1, 1937, and a mass was found in the right tubo-ovarian region. The question of primary appendicitis was not determined; however, the "tip of the appendix was adherent to the ureter." An appendectomy was carried out and the right ureter was cut off accidentally. It was repaired over a No. 6 whistle-tip ureteral catheter. Nothing was done to the tubo-ovarian mass. Symptoms of pyelonephritis developed on the ninth postoperative day. On September 15 (the fourteenth postoperative day) a pyelo-ureterogram revealed a right hydronephrosis of moderate degree and marked ureteral stricture (fig. 10). Recovery was satisfactory. Eventually the right ureter was dilated with a No. 12 F. catheter. Seven cystoscopic procedures for dilation have been carried out.

From two private, accredited hospitals in Los Angeles we have obtained the clinical details of all cases of ureteral injury following surgery. In hospital 1, from Jan. 1, 1928, to March 31, 1939, there were 65,759 operations; 33,378 were classified as general surgery and 15,307 as obstetric and gynecologic surgery. There were ten proved cases of ureteral injury in this institution. In hospital 2, from Jan. 1, 1930, to Dec. 31, 1938, there were 53,044 operations; 23,449 were classified as general surgery and 15,096 as gynecologic surgery. There were six proved cases of ureteral injury. In table 3 are summarized these sixteen cases of ureteral trauma following surgery.

CYSTOSCOPIC INJURY OF THE URETER

Ureteral catheterization, instrumentation and ureterography, in the presence of disease involving the excretory duct of the kidney, have been associated with the

production of ureteral injury. Slight hematuria or clot protrusion from a ureteral meatus has been observed occasionally following the introduction of a ureteral catheter. This amount of trauma may render the ureter inelastic and susceptible to greater damage at subsequent catheterization if carried out before the process has had sufficient time to heal. Indwelling ureteral catheters may cause this same change temporarily.²⁶ The extreme resistance to perforation of the normal ureter has been studied adequately by Wesson.²⁷ Henline²⁸ states that "a ureter diseased by fibrous stricture, ulceration, acute infection or incarcerated stone lends itself more readily to perforation; and, since it is with diseased ureters that one usually deals, occasional ruptured ureter is not inexplicable." Stevens²⁹ and Lynch and Thompson³⁰ concur in this opinion. Since the advent of so many instruments designed to assist the passage of or to extract ureteral calculi, the incidence of ureteral injury has increased. Foley³¹ recognizes their value, when properly employed, in the removal of very small stones. The application of any forceful maneuver at the site of impaction may rotate a rough stone and cause perforation through the adjacent area of disease. Injection of urographic medium has proved



Fig. 17 (case 39).—Stricture of left ureter. Perforation with catheters and extravasation.

this phenomenon; however, in our opinion the pressure of irrigating solutions or radiographic medium in several instances has completed the perforation through the diseased and traumatized area.

26. Shaw, E. C.: *South. M. J.* 21:889-894 (Nov.) 1928.
27. Wesson, M. B.: *California & West. Med.* 37:296-302 (Nov.) 1932.
28. Henline, R. B.: *Traumatic Injuries of the Upper Urinary Tract Following Instrumentation*, *J. A. M. A.* 102:182-188 (Jan. 29) 1934.
29. Stevens, W. E.: *J. Urol.* 31:741-754 (May) 1934.
30. Lynch, K. D., and Thompson, R. F.: *South. M. J.* 28:965-972 (Nov.) 1935.
31. Foley, F. E. B.: *Management of Ureteral Stone*, *J. A. M. A.* 104:1314-1318 (April 13) 1935.

That a catheter may assume a peculiar formation in the ureter has been reported by Fuss.³² Klika³³ reported that he tied a knot in a catheter in the ureter. He catheterized the right ureter to 23 cm. and wanted to remove the catheter. It could be withdrawn only 7 cm., and after employing various maneuvers Klika was



Fig. 20 (case 42).—Impacted ureteral calculus and attempted catheterization. Catheter buckled and split the ureter at 4 cm.

able to advance the tube downward an additional 2 cm. The roentgenogram revealed that the catheter was tied in a knot in the lower one third of the ureter. The cystoscope was reintroduced and, with the use of a "tenotome," he cut down on the ureter and bladder and retrieved the catheter. Practically complete healing was observed cystoscopically in three weeks.

At the Los Angeles County General Hospital, from Jan. 1, 1928, to March 31, 1939, there have been 19,459 cystoscopic examinations. Of this number there have been 10,597 bladder observations and 8,862 ureteral catheterizations (unilateral or bilateral). Our survey of these records discloses (cases of simple trauma excluded) the incidence of twelve cases of definite injury of the ureter during instrumentation; however, one of the twelve will be classified under "foreign bodies," since the tip of an instrument was broken off in the ureter and did not perforate its wall. In our private practice we have had three cases of ureteral perforation following instrumental manipulation. Table 4 summarizes the clinical particulars of the county hospital cases and our personal cases.

CASE 39.—R. A., a woman aged 39, was diagnosed as having left ureteral stricture at 10 cm. and left hydronephrosis. Dec. 4, 1936, all attempts to catheterize the left ureter were unsuccessful beyond 10 cm. A No. 14 F. bulb catheter was introduced into the left orifice and a pyelo-ureterogram was made by the syringe method with 40 per cent skiodan. Roentgenograms showed stricture in the lower third of the left ureter and

an area of extravasation (fig. 17). Surgical drainage was advised but refused. March 14, 1939, the patient was reported to be well; the hydronephrosis was inactive.

CASE 42.—E. B., a man aged 58, was diagnosed as having a right ureteral calculus. On cystoscopic examination and ureteral catheterization Nov. 15, 1937, an obstruction was encountered in the upper third of the right ureter; however, by manipulation the catheter was advanced to the renal pelvis. The patient requested discharge from the hospital. The next opportunity for ureteral dilation was December 16. At this time a No. 10 olive tip catheter was obstructed in the upper third of the right ureter. One week later the Johnson ureteral stone basket was advanced up the ureter, and after several unsuccessful attempts to engage the calculus it was withdrawn. A No. 12 olive tip ureteral catheter was passed up to the obstruction; after some additional force and rotation, the catheter seemed to advance readily. Roentgenograms revealed that this large ureteral catheter had passed through the ureteral wall and had coiled in the retroperitoneal space. Attempted ureterogram revealed extravasation (fig. 20). Surgery was advised immediately but the patient refused it. Pain in the right costo-iliac space became so intense that the patient consented to operation the next day. Exploration of the ureter revealed a longitudinal slit in its middle third, 4 cm. in length, which had been caused by buckling of the large catheter. The traumatized area was repaired with several interrupted sutures of chromic catgut. Only the superficial layer of the ureter was included in each stitch. The



Fig. 28 (case 46).—Manipulation of calculi with Howard spiral stone dislodger. Spiral broke in the ureter, necessitating surgical removal.

impacted calculus, which could not be advanced downward, was removed through a short longitudinal incision. The patient made an uneventful recovery.

URETERAL INJURY BY EXTERNAL TRAUMA

Gunshot wounds and ureteral injuries from other explosives are comparatively rare lesions, if one is to judge from the fact that only a few cases have been reported in the literature. The reason for this infrequency is due to the fact, first, that the ureter is small, not fixed, and well protected by the skeletal structures; second, that the conditions conducive to injury of the

32. Fuss, E. M.: *Ztschr. f. Urol.* 24: 284-286, 1930.

33. Klika, M.: *Ztschr. f. Urol.* 25: 590-593, 1931.

ureter, such as warfare, have not been associated with adequate diagnostic equipment, and, finally, that the associated pathologic lesions of other viscera are usually so severe that death ensues before ureteral injury is suspected.

Major trauma of the skeletal structures and viscera has been responsible for several instances of ureteral injury, the incidence of which is beyond exact determination. Of the recent authors, Lynch and Thompson³⁰ briefly abstracted the records of seven cases.

In our survey of the records of the Los Angeles County General Hospital and two accredited private hospitals in Los Angeles for the past eleven years, we were unable to find a case of ureteral injury due to external violence.



Fig. 29.—Metallic portion of threaded filiform tip of Johnson ureteral stone basket accidentally detached in the right ureter.

FOREIGN BODIES IN THE URETER

Foreign bodies of all descriptions have been found in the urinary bladder, but with the exception of calculi they have been found rarely in the ureter. In the past few years many ingenious instruments have been designed to assist in the passage or removal of ureteral calculi. For this reason the increase in incidence of foreign bodies in the ureter is apparent. Occasionally a portion of the device breaks or detaches from the main body of the instrument.

Arnone⁴³ in 1927 reviewed all the literature and reported the first case of formation of calculus in the ureter from a fragment of a grenade. Arnone expressed the opinion that the projectile injured the side of the ureter, caused ulceration and necrosis and later entered the lumen of the ureter.

As previously indicated, one case of "foreign body" in the ureter was present in a series of 8,862 ureteral catheterizations at the Los Angeles County General Hospital subsequent to Jan. 1, 1928. There is this

exception to the foregoing statement, of Stuart's case, previously published by Dakin⁴⁴ in "Believe It or Nots in Urology." In this instance Stuart, in attempting to extract a ureteral calculus with a stone basket, detached a threaded filiform in the ureter. He immediately reintroduced the instrument into the ureter and was able to reunite and retrieve the tip. Obviously, roentgenographic evidence of this achievement is not available.

CASE 46.—W. G., a man aged 32, on roentgenologic examination presented two large calculi in the lower third of the left ureter. At cystoscopy Aug. 2, 1938, the catheter was obstructed by the calculi at 3 cm. (fig. 27). Three days later three ureteral catheters were introduced to the left renal pelvis, twisted and withdrawn, but the stones were not retrieved. A ureteral incision was done; then the MacKay ureteral stone extractor was introduced without successful removal of the stones. At the same examination the Johnson ureteral stone basket was introduced into the bladder through the cystoscope, but one wire broke and the procedure was discontinued. August 10 another cystoscopic-ureteral dilation was carried out. Indwelling catheters were left. Six days later the Howard spiral stone dislodger was passed into the left ureter and it engaged the calculi. Traction was applied; the instrument returned without the spiral extremity. Roentgenologic examination revealed a "small metallic foreign body consisting of a spring with small metallic blocks at the ends, overlying the calculi in the left bony pelvis" (fig. 28). The patient was taken to surgery immediately; ureterolithotomy and removal of the Howard spiral stone dislodger were carried out. Convalescence was uneventful.

In our investigation of the records to March 31, 1939, of two private hospitals in Los Angeles, we were unable to discover a single case of "foreign body" in the ureter; however, an interesting accident occurred in the cystoscopic room of one of these institutions recently. Through the courtesy of one of our colleagues, the case report is abstracted briefly, as follows:

A man aged 60 was admitted to the hospital April 15, 1939, for cystoscopic examination and extraction of a calculus in the right ureter. The Johnson ureteral stone basket with filiform tip was introduced into the ureter and, on withdrawal, it was discovered that the tip remained in the ureter (fig. 29). Several unsuccessful attempts were made to extract the foreign body; however, a ureteral catheter was introduced into the renal pelvis and was left for drainage (fig. 30). On the second day the patient was given caudal anesthesia, cystoscopy was done and the filiform tip was removed successfully with the MacKay ureteral stone extractor.

In our opinion, this was a remarkable accomplishment, even though the calculus was not retrieved at the time but passed spontaneously in a few days.

CONCLUSIONS

1. Ureteral trauma occurs most commonly in the course of surgical procedures on the internal genitalia of the female; next as a result of cystoscopic intra-ureteral instrumentation, external violence and, finally, as the result of foreign bodies.
2. The present increase in incidence of ureteral injury is due mainly to recognition of the pathologic lesion. Unquestionably, the actual incidence is not known because numerous instances of unilateral ligation of the ureter result in unrecognized destruction of the kidney.
3. We unqualifiedly recommend ureteral catheterization as the method of prevention of ureteral injury in surgical cases that are considered, preoperatively, to be difficult.
4. The treatment of an injured ureter should consist of the procedures that will preserve, ultimately, the function of the ureter and kidney. Treatment is dependent

43. Arnone, G.: *Cultura med. mod.* 6: 495-497 (Oct. 1) 1927.

44. Dakin, W. B.: "Believe It or Nots in Urology."

on the time of recognition of the injury, the type and location of the injury and the condition of the patient.

5. If complete ureteral division is discovered at the time of operation, ureterovesical implantation or uretero-ureteral anastomosis is the procedure of choice, if the operation will not be hazardous.

6. When a segment has been removed, uretero-intestinal or ureterocutaneous anastomosis or ligation (in the absence of infection) is recommended.

7. Bilateral ureteral occlusion, recognized postoperatively, requires bilateral nephrostomy. The procedure of deligation is to be condemned.

8. Intra-ureteral instrumentation as a causative factor of ureteral injury is dependent usually on impaction of a calculus and adjacent disease of the ureter. The present increase in incidence of ureteral perforation is related closely to the recent development of many devices designed to remove calculi.

9. Fifty cases of ureteral injury, previously unpublished, have been reported. In two private hospitals in Los Angeles there were sixteen proved cases of ureteral injury in 30,403 gynecologic and obstetric operations. In 8,862 cystoscopic examinations and ureteral catheterizations (unilateral or bilateral) at the Los Angeles County General Hospital there were twelve proved cases of ureteral injury.

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TRAUMATIC CONDITIONS OF THE KIDNEY

CLINICAL OBSERVATIONS

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With the present adult public eager to go places in a hurry and the modern juvenile population actively engaged in individual and scholastic athletics during all months of the year, it is not surprising that the suburban hospital finds patients with kidney injuries among those who are admitted for treatment, and it is desirable that an interchange of experience be made concerning them.

This paper is based on observations that have been made on twenty patients, of whom eighteen were males and two females. The youngest was 7 years of age, the oldest 49 and the average age 21. Five patients had been hit by motor cars, three (children) had fallen from trees and three were injured in football accidents, and bicycle and motorcycle collisions accounted for two of the injuries. Three had received their injuries while coasting on a sled or toboggan, and those of two others were due to bullet wounds.

This paper must necessarily repeat a certain number of facts and figures recorded by many others. The direct and indirect type of trauma, as well as the various degrees of renal injury, are well described in present day urologic textbooks. Even experimental work in animals,¹ demonstrating the degree of injury following measured blows, with observations on the healing processes of the kidney has been added to data on this subject. The classic signs and symptoms² with their variations have likewise been recorded. The main pur-

pose here, however, is to evaluate certain observations with the purpose of assisting in the formulation of some practical program for the proper care of renal injuries. It is not difficult to review case records and classify them into certain types of injuries and discuss appropriate treatment. More important, however, is it to obtain data which will be useful in the care of future cases; in other words, to answer the question of what observations and studies are important to decide whether a patient needs surgical intervention or whether palliative measures will suffice.

Although there are many classifications for the types of kidney injuries, a very simple scheme seems to suffice in my cases. Contusions, subcapsular rupture, laceration or rupture of the kidney and capsule, and severance of the pedicle form the four groups under consideration, though it is fully realized that the individual case may fall into more than one group. This paper does not discuss injury to the previously diseased kidney.

CONTUSIONS OF THE KIDNEY

Of the twenty cases in this series, ten have been grouped under the heading "contusions of the kidney." Eighty per cent of the patients had pain in the renal area soon after the injury but only one of the ten experienced nausea and vomiting in conjunction with the pain. Only 50 per cent noticed gross blood in the urine during the first voiding after injury. After admission to the hospital, urine showing gross blood was obtained in 60 per cent and urine with microscopic blood in the remaining 40 per cent. There was no evidence of shock in nine and only mild shock in one. Abdominal examination showed tenderness in 50 per cent of the upper abdominal quadrant over the injured kidney, spasm in a corresponding area in 40 per cent and no evidence of abdominal distention in any. Tenderness in the flank was present in 80 per cent and spasm in the flank muscles in 40 per cent, but there was no bulging of the flank in any. During the first forty-eight hours after admission, pain and tenderness in the flank increased in only one case. This patient had fractures of three lumbar transverse processes.

Intravenous pyelography was done on six patients soon after admission. Although the injured kidney was visualized in all, secretion of the dye was delayed or scanty in several. Figures 1 and 2 demonstrate this point. No evidence of a subcapsular rent or extravasation was demonstrated. The opposite kidney was visualized well in all six examinations. When intravenous pyelography was repeated after an interval of more than seven days, prompt and improved visualization of the injured kidney was obtained.

Blood pressure during the forty-eight hours after admission was at a normal level in all. The pulse rate during the forty-eight hours after admission increased in only one of ten patients. In no instance was surgical intervention or treatment used. The urine became grossly clear in an average of three days. In 60 per cent the urine was microscopically clear in 5.3 days, the rest still showing microscopic blood ten days after the renal injury. There were no fatalities. Associated injuries were present in three cases: fractured lumbar transverse processes in two and fractured ribs in one.

The important clinical points which appear to place the injury in a group known as contusions of the kidney, requiring only palliative treatment, are as follows: no evidence of shock in 90 per cent; no fall of blood pressure during the first forty-eight hours of hospitalization; no rise of the pulse rate in 90 per cent during

From the Urological Department of the Newton Hospital.
Read before the Section on Urology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.
1. Stirling, W. C.: *Brit. J. Urol.* 8:1 (March) 1936.
2. Hinman, Frank: *Principles and Practice of Urology*, Philadelphia, W. B. Saunders Company, 1935. Keyes, E. L., and Ferguson, R. S.: *Urology*, ed. 6, New York, D. Appleton-Century Company, Inc., 1936.

the first two days in the hospital; no increase in tenderness and spasm of the flank or abdomen during a forty-eight hour period after admission to the hospital, and visualization of the injured kidney in a high percent-



Fig. 1.—Contusion of right kidney. Intravenous pyelogram showed slightly diminished secretion by right kidney.

age, although secretion of the dye may be delayed or diminished. If a patient with renal injury presents conditions coinciding with the points just mentioned, it would seem wise to pursue a conservative, nonsurgical program as the proper treatment.

SUBCAPSULAR RUPTURE

Only one case of subcapsular rupture was found in our series of twenty renal injuries. This fact corresponds to the observations of Stirling, who states in his experimental study of injuries of the kidney: "The amount of force necessary to rupture the organ is essentially that which will produce a primary division of the capsule."

In many respects the clinical manifestations were similar to those just described under the heading of contusions of the kidney. This patient had pain immediately after the injury (in a football game), although he was able to walk home. The first voided urine contained gross blood. No evidence of shock was present on admission to the hospital. No abdominal distention was present, although there was both tenderness and spasm in the upper and lower abdominal quadrants of the injured side. Likewise, tenderness and spasm were present in the flank. No bulging of the flank was noted. Psoas spasm was not present, nor did any develop. The pulse rate did not increase, and blood pressure did not fall during the first forty-eight hours in the hospital; neither did pain or tenderness increase during the first two days following the injury.

The extent of the renal injury was demonstrated by cystoscopy and by pyelograms of the affected side. It is, perhaps, wise to catheterize the injured kidney and obtain evidence of adequate renal function, but pyelography of the sound kidney might lead to renal suppression if, as a result of the examination, immediate operation with general anesthesia should be necessary.

When there is a possibility of immediate operation it seems wise to refrain from bilateral retrograde pyelography.

The patient had conservative expectant treatment with good recovery, although pyuria and intermittent hematuria delayed the final clearing of the urine until after he left the hospital about twenty days following the injury.

LACERATION OF KIDNEY AND KIDNEY CAPSULE

Lacerations should probably be divided into two groups, on the basis of their clinical course during the first few hours after injury. In the first group are patients who are admitted in a severe state of shock, nearly moribund and not in a condition for safe surgery, and who often die promptly in spite of sustaining measures to combat the shock. Two cases of this type form 10 per cent of the present series. Autopsy demonstrated an extensive laceration of the kidney, with widespread retroperitoneal hematoma, in addition to a fractured ileum in one case, while in the other complete oblique laceration of the kidney had led to an extensive retroperitoneal hematoma which had dissected across the vertebral column to the opposite renal bed as well as down into the bony pelvis. In the second group, six patients (30 per cent) were admitted to the hospital in reasonably good condition but with definite evidence of renal injury. The extent of such injury can best be determined by observation and study during the first few days after the injury. In this group especially it is important to seek evaluation of certain observations which may lead to surgery before the patient's condition has become precarious.

Taking true rupture of the kidney as a classification, we find eight in this series. All of the patients had pain immediately after their injury. Four were defi-

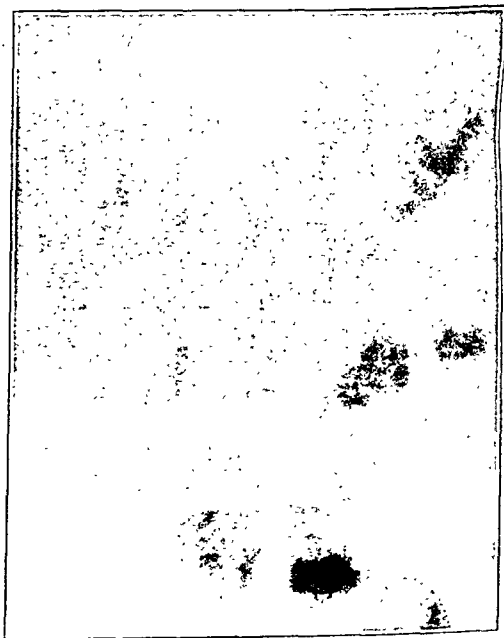


Fig. 2.—Contusion of right kidney. Intravenous pyelogram demonstrated delayed secretion from right kidney. Concentration of dye was normal after secretion started.

nately recorded as having nausea and vomiting in conjunction with their pain, a much higher proportion than the 10 per cent in those with contusions of the kidney. Gross blood in the urine was found in six, with no record of this condition in the other two. Abdominal

distention was present in only one, in whom the bullet causing the injury had also caused lacerations of the liver. Abdominal tenderness and spasm were present in all, in contrast to the 50 per cent and 40 per cent in



Fig. 3.—Laceration of left kidney due to bullet. Intravenous pyelogram demonstrated extravasation of dye into perirenal tissue.

those with contusions of the kidney. Tenderness in the flank was definite in each. Spasm of the flank muscles was also present in 100 per cent of those recorded, as contrasting with spasm of the flank muscles in 40 per cent of those with contused kidneys. A bulging flank was noticed in two patients who died within five hours of their injury. Obviously, patients in a severe state of shock, and with bulging flank, offer a poor prognosis unless they respond to shock treatment sufficiently to permit prompt surgery.

In six patients who lived more than forty-eight hours after admission to the hospital, the pulse rate increased in only three, even though subsequent events proved the severe extent of their injury. The pulse rate, therefore, is not to be absolutely relied on as a criterion for surgery. Blood pressure recordings were not available in the permanent records of these patients, but in view of the pulse records it is unlikely that normal blood pressure offers any security for the opinion that surgery should be done. On the other hand, a slowly rising pulse and falling blood pressure appear definitely to indicate prompt surgery.

During the forty-eight hours after admission, pain and tenderness in the flank and abdomen of the injured side increased in five of six patients observed. Increase in tenderness, especially in the lower abdominal quad-

rant, seemed to be especially significant, denoting perirenal extravasation of urine, blood or both. In conjunction with this increase in tenderness in the lower abdominal quadrant one could observe evidence of psoas spasm or irritation. The patient became moderately comfortable only with the hip flexed. Extension of the hip produced pain in the lower abdominal quadrant and flank. Evidence of psoas spasm was present in three. Other patients did not have this clinical finding recorded. In the three instances in which psoas spasm was noted and operation was performed even before any change of pulse or blood pressure was noted, the perirenal hematoma, extravasation of urine and ruptured kidney were promptly cared for, resulting in prompt recovery. It seems reasonable to emphasize increasing tenderness in the lower abdominal quadrant and psoas spasm over a period of from twenty-four to forty-eight hours as important indications for surgical intervention.

Intravenous pyelography was employed soon after injury of four persons. Visualization of the injured kidney was obtained in three. Visualization of the sound kidney was evident in all four. This form of study proved very helpful in one case in which a bullet had fragmented the lower pole of the kidney, allowing the dye to extravasate into the perirenal tissues (fig. 3). Nephrectomy led toward prompt recovery.

Intravenous pyelography was misleading in two other cases in which the kidney filled reasonably well without roentgen evidence of real cortical laceration. In both, increased tenderness of the lower part of the abdomen and psoas spasm led to surgery. Figure 4 shows no evidence of extensive laceration, yet at operation a deep rupture over the lower pole leading into the lower calix could be demonstrated in addition to a large quan-

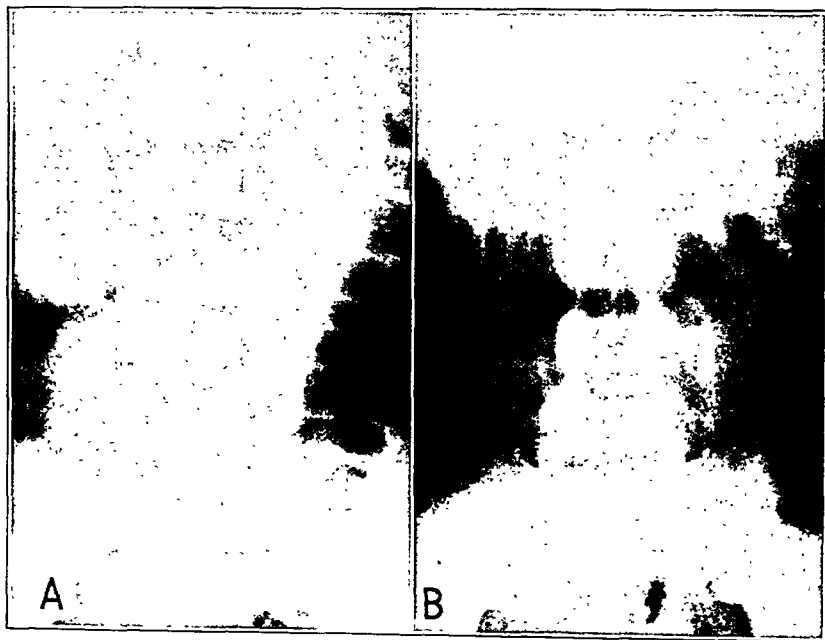


Fig. 4.—Laceration of left kidney. A, intravenous pyelogram showed no extravasation of dye, although at operation urine and blood were present in perirenal space. A deep laceration into the lower calix was present. Active bleeding had ceased. B, intravenous pyelogram sixteen days after drainage of the perirenal tissues. Improved secretion by the injured kidney is evident.

tity of blood and urine in the perirenal space. It was not necessary to perform nephrectomy. Simple drainage of the perirenal space was followed by prompt recovery. In another case intravenous pyelography

indicated reasonable filling of an injured kidney, yet increased tenderness and spasm of the lower part of the abdomen forced surgery. The nephrectomized kidney contained a deep tangential laceration of the lower pole. There was a large amount of perirenal hematoma. Both of these patients were operated on about forty

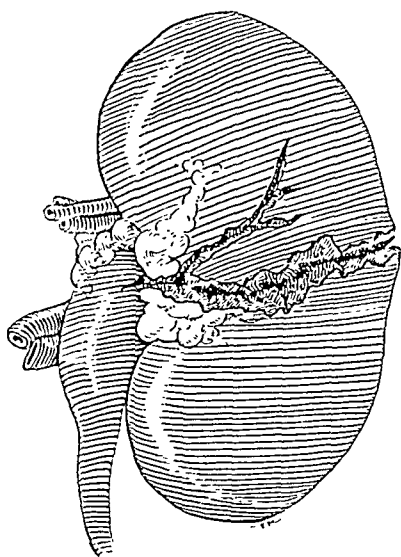


Fig. 5.—Complete transverse rupture of kidney. Anomalous blood supply. The patient was operated on forty-eight hours after the injury. She had only minimal symptoms but psoas spasm developed.

hours after admission to the hospital.

Lack of visualization of the injured kidney by intravenous pyelography may be significant. Because of increasing tenderness in the lower abdominal quadrant and psoas spasm forty-eight hours after the injury, surgical exploration was made and a kidney found with a complete transverse rupture (fig. 5). Nephrectomy led to prompt recovery.

Associated injuries were present in three of the eight cases. They included laceration of

the liver (bullet wound), fracture of the ileum and fracture of ribs.

There was immediate death of two patients within four hours of injury, before shock could be terminated to allow surgery.

Of six patients operated on, two died. One patient died from laceration of the liver and peritonitis in addition to the ruptured kidney. The other patient had had two abdominal operations by another physician for question of internal injury; the true diagnosis of ruptured kidney became evident only at autopsy. This last patient lived about one week after the injury and stands as a challenge to those who are against renal surgery as a form of treatment for renal injury. The autopsy demonstrated very extensive retroperitoneal hemorrhage by extension from the ruptured kidney from the depths of the bony pelvis to the retropleural tissue on the same side. Continuous oozing of blood over a period of days when not corrected by surgery led to a fatal result.

Critical analysis of this small group of true rupture of the kidney leads one to believe that those who do not die immediately from shock deserve not only frequent pulse and blood pressure recordings and intravenous pyelography or cystoscopic study but close clinical observation by the same physician, so that he may be alert to increasing abdominal tenderness and psoas spasm over a period of from twelve to forty-eight hours. When these features are observed it appears unwise to pursue a palliative program further. Nephrectomy versus surgical repair of the injured kidney must be left to the experience and discretion of the operator.

TRAUMATIC SEVERENCE OF RENAL PEDICLE

Traumatic severence of the renal pedicle must be extremely rare if one may judge by published reports. It is believed that immediate death usually follows extensive laceration of the renal pedicle. The remark-

able feature is that the patient in our series lived for five days after the accident. A woman aged 22, injured in a toboggan accident twenty-two hours before admission to the hospital, had pain in the injured flank, nausea and vomiting. No blood was present in the first voided urine specimen. At the time of hospital admission her pulse rate was 120. There was no clinical evidence of shock and no evidence of abdominal distention. Tenderness and spasm were present in the right flank, in addition to tenderness over the right side of the abdomen. The catheterized specimen of urine contained only microscopic blood. Intravenous pyelography demonstrated no secretion by the right kidney. During the next thirty hours, tenderness in the lower quadrant of the abdomen increased, although the pulse rate increased only a few points. Surgical exploration through the flank found a large, smooth infarcted kidney which was lifted out of the wound without any pedicle attachment. The ureter was intact. The kidney was removed after the ureter had been bisected. A large amount of blood clot was removed from the perirenal space, but no active bleeding was evident. No opening into the peritoneal cavity could be demonstrated. During the following two days signs of fluid developed in the chest and straw colored fluid was removed from the pleural cavity, but respiratory difficulty increased and the patient died. Permission for autopsy could not be obtained. It seems extraordinary that this patient, with complete traumatic rupture of the renal pedicle, did not die immediately. Microscopic examination of the kidney indicates a thin rim of cortical tissue just beneath the renal capsule which was apparently kept alive by capsular vessels.

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DIAGNOSTIC AND OPERATIVE FACTORS IN TRAUMATIC RUPTURE OF THE KIDNEY

FRANKLIN FARMAN, M.D.

LOS ANGELES

The incidence of traumatic rupture of the kidney is low (from 0.04 to 0.25 per cent of surgical admissions) but, according to McNeil¹ and others, such injuries appear to be on the increase, mainly because of modern traffic accidents. At one time the high mortality rate attending renal injuries led to a pessimistic prognosis but now, as stated by Abeshouse,² recent refinements in urologic and roentgenologic diagnosis and improvement in surgical technic have been responsible for a marked reduction in the mortality and morbidity of this condition.

I report here three private cases occurring during the past year (1937-1938), which Dr. R. C. Nelson of Beverly Hills and Dr. Layton Rogers of Whittier, Calif., diagnosed and referred to me.

REPORT OF CASES

CASE 1.—Mrs. D. S., aged 25, a patient of Dr. R. C. Nelson, was struck by an automobile Dec. 20, 1937, while crossing an intersection at night; she lost consciousness and was revived by first aid treatment and transferred to the California Hospital.

Preliminary examination revealed a tender masslike swelling in the left upper abdominal quadrant but no external body

Read before the Section on Urology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. McNeil, W. H., Jr.: Traumatic Injuries of the Kidney and Ureter. *Internat. J. Med. & Surg.* 40: 6-10 (Jan.) 1933.
2. Abeshouse, B. C.: Rupture of the Kidney Pelvis, Surg., Gynec. & Obst. 60: 710-729 (March) 1935.

injury. Roentgen examination showed fracture of the tips of the left third, fourth and fifth transverse spinous processes (fig. 1).

Three hours after the injury the patient complained of severe pain in the back and voided urine containing 50 per cent blood. The blood pressure was 112 systolic, 60 diastolic, the pulse rate 84 and the temperature 97 F. Severe pain in the back and

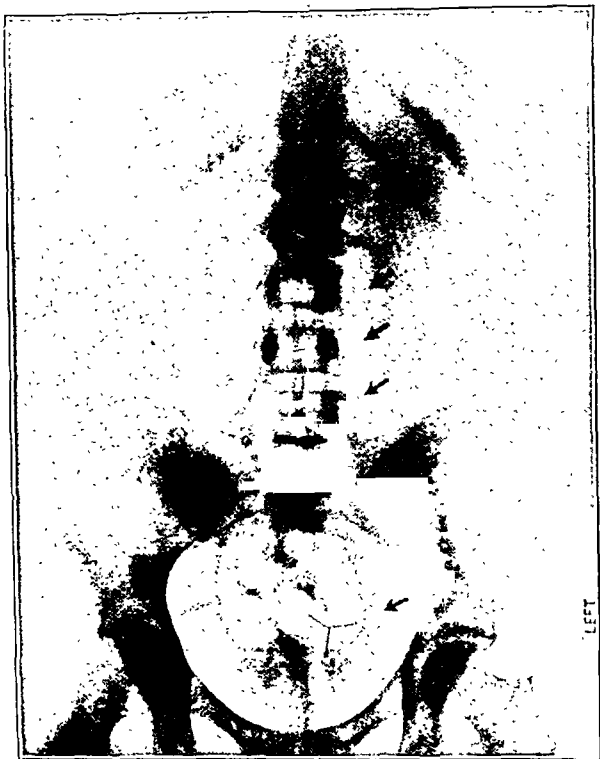


Fig. 1 (case 1).—Appearance immediately following injury before "renal ileus" had developed, showing fracture of the left third, fourth and fifth transverse spinous processes. Note gold-plated contraceptive pessary.

hematuria continued the following day with elevation of temperature to 101 F. and pulse to 100 and an appearance of abdominal distention.

Urologic consultation was called forty hours after the injury. By this time the patient presented increased toxic and hemorrhagic manifestations, pallor, restlessness, rapid pulse to 130, fever to 102 F., abdominal distention, distress and rigidity of the left flank muscles masking palpation but nevertheless pointing to renal involvement. Cystoscopy showed efflux of bright red blood from the left ureteral opening on deep respiration. There was a prompt flow of clear urine from the right kidney and no secretion from the left kidney. The phenolsulfonplthalein test was not done because of lack of sufficient secretion of urine. A left pyelogram (fig. 2) with 7 cc. of 20 per cent skiodan solution showed a kidney pelvis of normal size having a distorted upper calix through which there was escape of opaque medium into the surrounding soft tissue.

Nephrectomy was done under difficulty forty-two hours after the injury on this obviously poor risk patient. The perirenal fascia was torn and the retroperitoneal space filled with thin serum, blood and extravasated urine. A kidney (fig. 3) of average size was removed, lacerated deeply (from 1 to 2 cm.) on its posterior surface involving the capsule, parenchyma and pelvis and extending upward transversely from the hilus to the lower border. The pedicle and fascial attachments about the hilus were elongated, stretched and torn. Extending beneath the capsule around the tear was a large hematoma. A yellowish maplike anemic infarct was noted in the upper pole, at the margin of which there was a small secondary laceration.

A transfusion of whole blood (500 cc.) was given at the close of the operation (by Dr. Maner). Within twenty-four hours the pulse rate had dropped to 120 per minute, the temperature

remained elevated to 101 F. and the blood pressure was 112 systolic, 68 diastolic. Abdominal distention disappeared, peristalsis returned and nausea ceased. From then on convalescence was steady without complication. There was complete recovery, although secondary anemia persisted for several weeks.

CASE 2.—Miss E. B., aged 20, a university student, was injured in an automobile accident Oct. 28, 1938. Four students were riding in a coupé, when the car struck a soft shoulder on a curve and ran into an embankment. The patient was struck in the left side by the handle of the gear shift, which was bent to the floor. She was rendered unconscious and awoke in an ambulance. She entered Murphy Memorial Hospital, Whittier, Calif., about 9 p. m., complaining of severe pain in the left side necessitating morphine for relief.

Dr. Layton Rogers examined the patient and found a slight bruise on the back and marked tenderness with muscle rigidity over the left renal area. Since she was unable to void urine a catheter was passed, obtaining very bloody urine. Following an injection of morphine the pulse rate quieted to 90-100, and the blood pressure, which was 125 systolic, 70 diastolic, remained normal throughout the first night.

The following morning cystoscopy showed marked hemorrhagic cystitis with scattered patches of submucous hemorrhage. The bladder appeared relaxed, owing to temporary paralysis. Spurts of blood appeared from the left ureteral orifice. There was a prompt flow of clear urine from the right kidney and hemorrhagic urine, almost pure blood, from the left kidney. A function test showed 50 per cent phenolsulfonphthalein output from the right kidney in thirty minutes and an undetermined amount from the left because of blood admixture. A left pyelogram (fig. 4) with 20 per cent skiodan solution showed a well filled pelvis with blurring of the upper minor calices and escape of some opaque medium into the parenchyma.



Fig. 2 (case 1).—Left pyelogram showing extravasation of skiodan into parenchyma. Note "renal ileus."

Conservative expectant treatment was followed for another twenty-four hours, during which time the urine cleared somewhat (less hemorrhagic), muscle rigidity lessened, pain abated but still required morphine, the appetite returned and the outward clinical appearance was favorable. The one disturbing sign was an increase in the pulse rate to 120-130; however, with no appreciable drop in blood pressure, which was 120 systolic, 80 diastolic, the pulse pressure decreased 18 points.

A watch and wait policy was decided on. Sixty-five hours after the injury the clinical evidence was less favorable, the pulse rate had increased to 130-140, the temperature to 101 F., nausea appeared, there was definite increased tenderness in the left kidney area—more anterior than posterior—and the blood count showed a drop in the hemoglobin content from 75 to 65 per cent, with loss of red blood cells to 2,980,000.

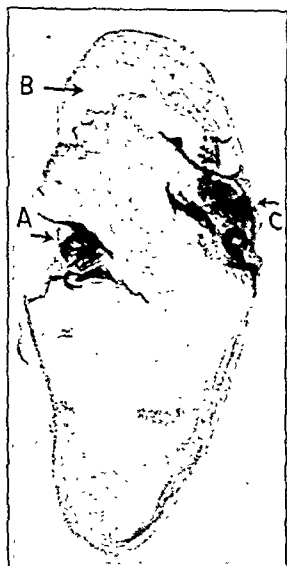


Fig. 3 (case 1).—A, transverse rupture through hilus; B, anemic infarct at upper pole; C, subcapsular hematoma.

Operation was done by the left oblique approach. A massive hemorrhage was confined within the perirenal capsule. Delivery of the kidney was extremely difficult, owing to its short pedicle and high position, the upper pole reaching to the tenth rib. Although well protected by the rib cage, injury may have been favored because of its fixed position and relative immobility (a mobile organ absorbs shock). The nephrectomy was completed in the presence of uncontrollable bleeding resulting from friability of all tissues about the hilus, preventing accurate clamping of the vessels.

The removed kidney showed both a transverse (4 cm.) and a linear (3 cm.) rupture, criss-cross fashion, at the middle convex portion extending deeply into the parenchyma (fig. 5). There was fragmentation of the upper pole, a point to remember in uncontrollable hemorrhage.

Death occurred fifteen minutes after she returned to her room, from circulatory collapse due to exsanguination.

Primarily, this was an operative death of a relatively good risk patient, carefully watched from the onset, having the benefit of standard diagnostic procedures which did not indicate the extent of the injury, and operated on at the first definite sign of a retrogressive course. David M. Davis³ said "I wish now to ask whether it would not be better to admit frankly that in some cases it is beyond the power of any human being to remove the kidney and save the patient."

CASE 3.—O. H., a high school boy aged 15, was injured Nov. 3, 1938, in a football game. He was struck from behind by an opponent's knee while reaching high in the air, running for a forward pass. He fell to the ground but with assistance walked to the sidelines. He complained of severe pain in the left kidney region and vomited twice. He was removed to the Murphy Memorial Hospital, Whittier, Calif. There were no external bruises and a roentgen examination revealed no injury to adjacent bony parts. He voided a small amount (40 cc.) of almost pure blood shortly after admission.

I was called by Dr. Layton Rogers about six hours after the accident. By this time the evidence of severe injury to the left kidney was clinically indicated. Just prior to my seeing him the patient had been given 1,000 cc. of 10 per cent dextrose solution intravenously because of partial collapse, pallor, profuse sweating and rapid pulse to 120 with blood pressure of 80 systolic, 40 diastolic. The pulse had steadied to 90, but the blood pressure remained unchanged (80/40). There was marked rigidity with muscular spasm in the left flank. Palpation caused distinct pain and posteriorly the renal area was extremely tender, even to light percussion. Another voided specimen contained large quantities of dark red blood. The blood count showed 72 per cent hemoglobin, 3,680,000 red cells and 34,000 white blood cells; such a leukocytic response is not an unusual finding in severe hemorrhage.

Operative intervention was urgently necessary and decided on without the aid of further urologic study. One may ask what was the condition of the opposite kidney. This was not known, but congenital absence occurs only once in 22,000 persons, according to Stevens.⁴ A left lumbar incision was made. A massive fresh hemorrhage (500 cc.) was confined within the perirenal capsule. An elongated pedicle facilitated delivery and the kidney was excised.

There was a complete transverse fracture of the left kidney (figs. 6 and 7), the rupture having occurred across the middle about the level of the lower margin of the pelvis, dividing the organ in half. The lacerated surface of the lower portion was cleancut and that of the upper half filled with thick clotted blood, which indicated that the main pedicle vessels were not torn.

A citrated blood transfusion (500 cc.) was given and epinephrine was administered once postoperatively. Diaphoresis was profuse. Fortunately 5 ounces of urine was obtained by catheter eight hours after the operation, relieving the minds of all as to the function of the remaining kidney.

Convalescence was slow and complicated by a subcutaneous staphylococcal infection of the wound, which, no doubt was favored by the persistent secondary anemia. Recovery was complete after two months.

DIAGNOSIS

In order to appreciate more fully the problem of diagnosis, an understanding of the classification of renal injuries is essential. Hinman's⁵ classification is similar to Gutierrez's⁶ but is more complete and descriptive, with seven subdivisions as follows: (1) tears of fatty capsule without injury to the kidney, producing perirenal hemorrhage, which usually undergoes absorption and organization; (2) contusion of the kidney, resulting in multiple subcapsular points of hemorrhage; (3) rupture of the parenchyma, the so-called fragmentation, or pulping; (4) rupture of the parenchyma with capsular tear, in which the hemorrhage is usually greater; (5) rupture of the parenchyma, capsule and pelvis, urinary extravasation thus being added to the perirenal



Fig. 4 (case 2).—Left pyelogram showing escape of small amount of opaque mediums from the upper minor calix.

hematoma; (6) renal rupture with a tear in the peritoneum, which is rare and usually occurs in children, and (7) rupture of the vascular pedicle and tearing of the ureter, always producing fatal hemorrhage.

4. Stevens, W. E., quoted by Cunningham, J. H.: *Year Book of Urology*, Chicago, Year Book Publishing Company, 1937, p. 109.
5. Hinman, Frank: *Principles and Practice of Urology*, Philadelphia, W. B. Saunders Company, 1935.
6. Gutierrez, Robert, in *Cabot's Modern Urology*, ed. 3, Philadelphia, Lea & Febiger, 1936.

3. Davis, D. M.: *Conservative Methods in the Surgery of the Chronically and Severely Infected Kidney*, Tr. New England Branch, Am. Urol. A.

Our problem in diagnosis is to determine the extent and type of the injury and the expected course. It is a common observation that the degree of damage is out of proportion to the severity of the trauma; that is, a comparatively slight blow or fall may produce extensive rupture of the kidney.

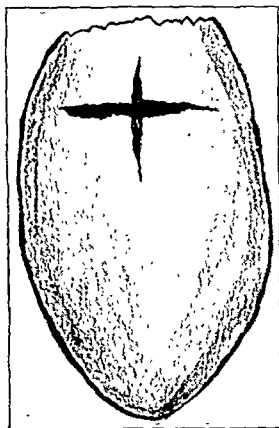


Fig. 5 (case 2).—Diagrammatic sketch showing transverse and linear rupture (crisscross) and detachment of upper pole of the left kidney.

Although the symptoms of kidney rupture usually appear immediately, a definite sign may be delayed for a few hours and in rare instances for several days, as in the case reported by Kirwin (ten days later).

Keyes and Ferguson⁷ state simply that rupture of a kidney is suggested by the history, the hematuria and the perirenal hematoma. Leon Herman⁸ discusses the three major symptoms as pain, hematuria and shock. Pain may result solely from contusion of the soft parts or, if severe, may indicate rapid perirenal extravasation. Renal colic occurs most frequently in cases of intracapsular rup-

ture and is caused by occlusion of the ureter by blood clots. In case 2 the pain was almost negligible and minimized, I suppose to discourage operation, as I later learned from her mother that the patient was a great bluffer. Hematuria is the most significant and constant sign of renal injury but is by no means characteristic. Both Herman⁸ and Kretschmer⁹ remark that a bleeding papilloma may cause gross hematuria following injury. The incidence of hematuria in renal injuries is variously estimated at from 75 to 95 per cent. Profuse and continuous hematuria was present in all the cases that I have reported and it should be reemphasized that if for no other reason catheterization should be done for diagnostic purposes soon after trauma unless the patient is able to void.

Wesson¹⁰ explains that "shock coming on after an elapse of several hours is due to hemorrhage, whereas if it occurs at time of injury it is not due to the kidney lesion but to injury to the solar plexus." Herman⁸ says that mild shock is often noted but if severe suggests complications such as injuries to the liver, mesentery, spleen or intraperitoneal bleeding. Priestley and Pilcher¹¹ noted definite shock in only three of forty-five cases, whereas Schenck¹² found shock present in eighteen of forty-two cases. In the three cases of total rupture with which I have dealt recently, immediate loss of consciousness occurred in two and shock did not occur in the third case but recurring syncope a few hours later indicated rapid progressive hemorrhage.

Aside from the history of trauma, presence of hematuria, pain in the kidney region and some degree of shock, the physical examination is of great importance in determining the severity of the renal lesion. Kretschmer⁹ says that the diagnosis of trauma to the kidney is

less difficult than the establishment of the degree of injury. The extent of perirenal hematoma, loin tumor or mass in the side is an important sign of the severity of the renal lesion, but its determination is more difficult. Muscular rigidity, tenderness and abdominal distention, if present, may mask satisfactory palpation and correct interpretation of retroperitoneal accumulations. Hemorrhage and extravasation may extend to the iliac fossa and inguinal rings before being recognized. I agree with Rolnick¹³ that one must depend in the main on clinical evidence for the early diagnosis of kidney injuries.

I now come to the question of further investigation by urologic means. Opinion diverges at this point as to the relative value and danger of cystoscopy, pyelography and intravenous urography.

The argument against employing cystoscopy in these cases is the possibility of introducing infection in a fertile bed of traumatized tissue and of increasing the hemorrhage. However, the possibility is more theoretical than actual and I fail to find in the literature any reported accounts of known infection or increased hemorrhage caused by cystoscopy in injuries to the kidney. Redi,¹⁴ Schenck,¹² Gutierrez⁶ and others subscribe to this view, but all caution that examination should be carried out with complete asepsis and that pyelography should preferably be done by the gravity method. The knowledge gained by observation cystoscopy is of inestimable value, including visualization of the bladder (which may also show signs of trauma) and ureteral efflux of blood from the affected side. If



Fig. 6 (case 3).—Complete transverse rupture (fracture) of the left kidney.

the ureter is plugged, a ureteral catheter serves to dislodge the clot. Determination of the functional capacity of the opposite kidney by dye estimation or chromocystoscopy is facilitated unless there is anuria, which is extremely rare.

13. Rolnick, H. C.: Pyelography in Injuries to the Kidney, *Am. J. Surg.* 20: 40-44 (April) 1933.

14. Redi, R.: Les lésions traumatiques du rein et leur traitement, *J. d'uro.* 38: 231 (Sept.) 1934.

7. Keyes, E. L., and Ferguson, R. S.: *Urology*, ed. 6, New York, D. Appleton-Century Company, Inc., 1936, p. 312.

8. Herman, Leon: *Practice of Urology*, Philadelphia, W. B. Saunders Company, 1938.

9. Kretschmer, H. L.: *S. Clin. North America* 2: 801 (June) 1922.

10. Wesson, M. B.: *Treatment of Traumatic Rupture of the Kidney*, *Ann. Surg.* 83: 346 (Feb.) 1926.

11. Priestley, J. T., and Pilcher, Frederick, Jr.: *Traumatic Lesions of the Kidney*, *Am. J. Surg.* 40: 357-364 (May) 1938.

12. Schenck, G. F.: *Traumatic Rupture of Kidney*, *California & West. Med.* 40: 341-346 (May) 1934.

Pyelography and urography will reveal as a rule whether or not a rupture of the kidney has occurred but usually do not reveal the extent of the lesion and for that reason are misleading, and their interpretation should not be fully depended on in dealing with doubtful or critical cases. In case 2 I was influenced to delay operation disastrously by the comparative minor escape of opaque mediums into the parenchyma when the true condition found was one of total capsular rupture and fragmentation of the upper pole. Redi,¹⁴ Gutierrez,⁶ Beach¹⁵ and others advocate immediate pyelography in cases of suspected rupture of the kidney as the most dependable and accurate method of diagnosis. As a rule radiography should be done soon after injury, for "renal ileus" and abdominal distention develop rapidly and tend to obscure the kidney outline.

A large group of urologists advocate intravenous urography in preference to cystoscopy and retrograde pyelography for the diagnosis of kidney rupture. In many instances it is an efficient procedure but the one



Fig. 7 (case 3).—Complete rupture of the left kidney. Upper fragment shows hematoma. Lower fragment is clean-cut.

great disadvantage to its use is that the radiographic examination cannot be depended on to portray the actual traumatic lesion of the kidney when the factor of time and early diagnosis are so essential in critical cases. The reason for this is that the secretory powers of the kidney are reduced or inhibited altogether by trauma, which results in degeneration of the tubules, subcapsular and parenchymatous hemorrhage, edema and infarction. If accompanied by shock, the excretory power of the kidney is further reduced by a fall in blood pressure and lowered blood volume to the organ.

The limited value of excretory urography has been shown experimentally by Stirling and Lands¹⁶ using cats and dogs and by Domrich (cited by Scholl¹⁷) using rabbits, subjecting the kidney of these animals to various gradations of trauma. The latter concludes that excretory urography can reveal the gravity of the

lesion only immediately after the rupture and indicates which side is involved but does not reveal the extent or type of the lesion. To summarize, the usefulness of excretory urography is limited to the diagnosis of those injuries, usually minor in extent, in which the secretory power of the kidney is not impaired, whereas retrograde pyelography is the more useful and dependable for the early diagnosis of severe kidney injuries.

With modern methods it is possible usually to establish a diagnosis of rupture of the kidney, but there are cases of closed abdominal injury with misleading and confusing symptoms which call for the most careful urologic and surgical consultation. Backus¹⁸ discusses the occurrence of the symptomatology of acute conditions of the abdomen in cases of traumatic rupture of the kidney. He reports two such cases with retroperitoneal hemorrhage producing as the early outstanding symptoms those of acute peritonitis. Backus,¹⁸ Delzell¹⁹ and others cite instances in which mistaken diagnosis has led first to exploratory laparotomy before the true condition of kidney rupture was recognized. In a differential diagnosis one must further consider other retroperitoneal catastrophes such as "spontaneous" perirenal hematoma, rupture of a renal or aortic aneurysm or bleeding from a retroperitoneal tumor—especially if preceded by a history of trauma.

TREATMENT

A study of the accompanying table convinces one that the mortality rate in injuries of the kidney is high, averaging well up around 20 per cent. In the larger series of collected statistics, as reported by Watson,²⁰ Suter²¹ and Lardennois,²² the mortality rate favors slightly the operative plan of treatment over the expectant or conservative method. Small series of cases and the more recent statistics indicate "conservatism" as the method of choice. Few surgeons have had actual personal experience with more than ten cases, and the mortality rate in small series of the more serious injuries is nearer 33⅓ per cent for any plan of treatment.

Before the advent of urology as a definite entity, the older group of surgeons treated injuries of the kidney either expectantly or radically by nephrectomy; now the more recent writings advocate conservatism and repair surgery. Tuffier²³ (1889) and Powers²⁴ (1938) on the basis of their observations on experiments with regard to the healing of renal injuries advocate conservative treatment with the expectation that the traumatized kidney will recover sufficient function to be a useful and serviceable organ. This functional recovery is due to the rapid regeneration of tubular epithelium, which contention is further supported by the work of Severi (cited by Redi¹⁴), who used rabbits to show that in the experimentally traumatized kidney, if the tubules themselves are left intact for the most part, function is not interrupted even in the days immediately following injury.

Many present day urologists are guided by this principle and advocate the expectant plan of treatment in the majority of cases of unilateral renal trauma with

15. Beach, E. W.: Traumatic Rupture of the Kidney: Report of Ten Cases, *California & West. Med.* 33: 494 (July) 1930.
16. Stirling, W. C., and Lands, A. M.: An Experimental Study of Injuries to the Kidney, *J. Urol.* 27: 466-479 (April) 1937.
17. Scholl, A. J.: Review of Urologic Surgery, *Arch. Surg.* 36: 336 (Feb.), 531 (March), 1019 (June) 1938; 37: 667 (Oct.), 835 (Nov.) 1938.

18. Backus, H. S.: Traumatic Rupture of Kidney with Symptomatology of Acute Abdomen, *New England J. Med.* 211: 563-564 (Sept. 27) 1934.
19. Delzell, W. R., and Harrah, F. W.: Eleven Cases of Ruptured Kidney, *J. Urol.* 19: 131-148 (Feb.) 1928.
20. Watson, F. S.: Subperitoneal Injuries of the Kidney, *Boston M. & S. J.* 159: 29, 1903.
21. Suter, F. A.: Beitr. z. Min. Chir. 47: 349-402, 1905.
22. Lardennois: Etude sur les contusions, déchirures et ruptures du rein, Paris, G. Steinheil, 1908.
23. Tuffier, Théodore, quoted by Alexhouse.
24. Powers, J. H.: Renal Function Following Trauma of the Kidney, *Surgery* 3: 397-406 (March) 1938.

the expectation that the traumatized kidney will recover sufficient function to be a useful and serviceable organ. Hermann²⁵ states that conservatism is a byword in urology, and perhaps in no other urologic condition is it more important or has it given more striking results than in traumatic rupture of the kidney. In all cases in which there is no severe bleeding from the kidney and no demonstrable injury of other organs, a waiting policy is the treatment of choice. Rest in bed, an ice bag to the side and harmless unimportant medicines and morphine constitute the type of treatment.

Conservative treatment certainly is indicated for the obviously minor kidney injury, but when it comes to the more severe or doubtful case the basis for operative intervention is not at all unanimous. The reasons for this, as mentioned before, are the difficulties of correct interpretation of clinical and urographic data. For instance Gutierrez²⁶ says "The prevailing opinion is that in view of the possible dangers and sequelae of renal injuries, and of the slight risk of an exploratory operation, surgical intervention is indicated early and frequently rather than late and rarely." Delzell¹⁹ says "We believe that it is safer to investigate doubtful cases under regional anesthesia (which has the advantage of not increasing blood pressure, thereby producing more hemorrhage) than to treat expectantly." In his summary, Pugh²⁶ says "A certain percentage may recover without surgery, but many do not 'err on the right side.'"

Redi¹⁴ subscribes to the view of early conservative surgery on the basis of experimental results which encourage the surgeon to proceed to reconstruct the injured organ. He concludes: "Unless there is evidence from the pyelogram or it is demonstrated that the kidney has been completely destroyed or detached from its pedicle, the proper conservative procedure is partial or multiple resection of the organ, after a preliminary decapsulation. The use of tampons is bad as it may lead to fistulas, but a Mikulicz drain is important."

Vesson¹⁰ describes the method of conservative surgery for a damaged kidney with a torn capsule as tampon, suture or débridement. The use of a tampon as a rule is not desirable, but, if one is faced with a severe hemorrhage from an inaccessible kidney in an already exsanguinated patient, simple quick drainage, tamponade and loose closure may be life saving. Débridement is not applicable in many cases but, if the rupture is subcapsular and there is no pedicle or pelvic injury, a decapsulation may relieve the pressure within the kidney and save the parenchyma from further necrosis. Davis²⁷ says: "In any operation on rupture of the kidney it is most important to remember that the operative mortality in this type of case is rather high, and it is therefore better in many cases to do as little as possible in order to stop the hemorrhage and start the patient on the way to recovery. There is no doubt that many lives have been lost by ignoring this counsel of moderation."

Repair surgery of kidney wounds with any of the methods of suture applicable to the case has been amply demonstrated both experimentally and clinically. Stirling and Lands,¹⁶ using dogs, have shown that operative repair in injuries of type 3 was successful in all experiments when tried, whereas in 80 per cent of the non-

repaired animals the trauma resulted in death. They emphasize the value of applying fat to the bleeding surface as a means of checking hemorrhage, as recommended by Koll²⁸ and by Lowsley.²⁹ To avoid destruction of kidney tissue, the fibrous capsule was utilized as a support whenever possible. Sometimes, especially with the larger kidney, the organ was held together by ribbon catgut, as recommended by Lowsley.²⁹ Even with this type of suture there was some reduction in the size of the organ, but they believe that its use offers many advantages over the older type of sutures used in the repair of kidney injuries. Kindall³⁰ recites a case in which a complete transverse rupture was repaired with ribbon catgut and a normally functioning kidney was obtained. To Lowsley²⁹ goes the credit of reemphasizing the value of repair surgery in both traumatic and nontraumatic kidney wounds and his introduction of the use of ribbon catgut. Sometimes a badly ruptured kidney may be saved by the use of large mattress sutures tied over pieces of muscle or fatty tissue.

Treatment and Mortality

Author	Collected Cases*	Number of Cases According to Method of Treatment, Mortality Given in Percentage			Total Mortality
		Expectant	Conservative Surgery	Nephrectomy	
Kuster, 1896.....					47.0%
Riese, 1903.....	490	327-21.1%	83- 4.7%	78-17.9%	18.0%
Watson, 1903.....	562	29.0%	Without complication.....	18.3%	
			With complication.....	44.0%	
Suter, 1905.....	701	427-20.6%	143-14.6%	131-16.7%	30.4%
Keller.....	478	478-22.0%			17.3%
Gutierbock.....	13 p			13-30.7%	22.0%
Willis.....	14 p			14-55.5%	30.7%
Gravitz.....	108				55.5%
Lardennois, 1908.....	767	20.0%	23.0%	18.0%	46.2%
Ponomareff, 1914.....	123	9.0%			22.0%
Bugbee, 1916.....	8 p	6	1	1	None
Delzell and Harrah, 1928	11	7-14.3%	3-33 1/3%	1	18.1%
Floyd and Pittman, 1932	6 p	2	3	1	None
Schenck, 1934.....	42	31- 3.3%	6	5	23.8%
Hermann, H. B., 1936....	85	74-12.2%		11-36.3%	24.2%
Priestley and Pileher, 1938.....	45	25	13		4.4%
Kindall, 1938.....	10 p	4	3	3	None
Droschel and Fink, 1938..	45	30-None		15-None	None
Farman, 1939.....	3 p			3-33 1/3%	None
Thomson-Walker.....	Estimated mortality in uncomplicated cases				33 1/3%

* p indicates personal cases.

In the operative treatment of renal injuries our first concern is the life of the patient and secondarily preservation of the kidney. Control of bleeding is absolutely essential. In the more severe cases in which there is massive hemorrhage the tendency is to do a nephrectomy. The reason for this is the emergency itself and, unlike elective surgery, a carefully planned operation usually is impossible.

There is no rule to guide one as to whether or not to do a nephrectomy. Rapid decision and judgment are demanded by the immediate exigencies of each individual case. In general it may be said that nephrectomy is indicated for rupture of the kidney when there is extensive destruction of tissue, multiple deep lacerations, injury to the pedicle, unrepairable tears of the pelvis or ureter or persistent hemorrhage. There are many hazards to nephrectomy in the presence of shock, exsanguination, torn and friable tissue, massive hematoma and urinary extravasation. Quick control of

25. Hermann, H. B.: Nierenrupturen, Ztschr. f. urol. Chir. u. Gynäk. 42: 115-122, 1936.

26. Pugh, W. S.: Traumatic Rupture of the Kidney, Internat. J. Med. & Surg. 47: 27-31 (Jan.) 1934.

27. Davis, D. M.: Rupture of the Kidney, Nelson New Loose-Leaf Surgery 6: 592C-592F.

28. Koll, I. S., quoted by Stirling and Lands.¹⁶
29. Lowsley, O. S., and Bishop, C. C.: A New Method of Repairing Kidney Wounds, Surg., Gynec. & Obst. 57: 494-500 (Oct.) 1933.

30. Kindall, L. E.: Conservative Renal Surgery with Particular Reference to Kidney Trauma, California & West. Med. 49: 115-120 (Aug.) 1938.

bleeding is the first essential and may be complicated by fresh hemorrhage when the kidney is exposed, owing to release of pressure. In delivery extreme care should be taken not to tear or pull an already lacerated kidney loose from its pedicle. Hermann²⁵ cites a case in which the kidney was found floating in blood, and O'Connor,³¹ in referring to emergency operations, cites one of his cases in which death occurred from hemorrhage owing to pulpefaction of the kidney and a tear directly across the renal pedicle. In one of my own cases I failed to remove the detached upper pole. If the pedicle is inaccessible or delivery difficult, drainage, tamponade, loose closure and blood transfusion may save the patient, if Davis's "counsel of moderation" is remembered.

The radical procedure of nephrectomy has the advantage over conservative surgery in eliminating possible future invalidism resulting from the danger of persistent urinary sinus, perirenal abscess formation, chronic pyelonephritis, kidney infection with stone formation and occasionally a secondary hemorrhage, as mentioned by McNeil,¹ in which late hemorrhage occurred on the sixteenth day as a result of collapse of an infarct as found at operation. Droschl and Fink³² doubt the wisdom of the policy of leaving an injured kidney to heal in many instances. In six of the medical cases in the series compiled by Priestley and Pilcher,¹¹ ultimate nephrectomy was necessary. There is no doubt that some injuries of the kidney which are treated by expectant or conservative surgical methods ultimately result in dislocations, scar formation, contracture, pseudo-hydronephrosis, infection and other sequelae which may require operation and often nephrectomy many months to years later.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. RUSCHE AND BACON,
DR. PRATHER AND DR. FARMAN

DR. HARRY C. ROLNICK, Chicago: Drs. Farman and Prather emphasize the frequent necessity for surgical intervention. The experimental work of Stirling and Lands has revised the clinical classification of these injuries and has shown the importance of the renal capsule. Marked damage to the kidney occurs only when the capsule has been torn. Subcapsular fracture of the kidney seldom occurs. Their experiments do not explain satisfactorily the fact that when severe injuries occur the lower pole is most frequently involved. This may be due to its more exposed position. The authors have classified these injuries into mild and severe. The minor forms require but little attention and clear up within a few days. They present few symptoms and practically no radiographic signs. Intravenous urography has been of great aid both early and late in the diagnosis, prognosis and treatment of injuries of the kidney. Within the first twenty-four hours failure of secretion on the involved side is often diagnostic. In most cases after a few days it gives fairly accurate information as to the amount of renal damage. Within a few weeks after a severe injury has been treated conservatively it will demonstrate the amount of permanent damage to the kidney and the degree of distortion of the pelvis and ureter. Simple cystoscopy is occasionally of value in diagnosis, but I cannot agree that retrograde pyelography has a place in the diagnosis of renal injuries. Although better visualization may be had at times, the dangers involved in the insertion of a catheter and the injection of fluid into the pelvis under some pressure are too great to warrant its use. Bleeding can be aggravated and the dangers of infection are markedly increased. The tears in the kidney can also be enlarged. In doing some experimental work recently I have found, as has been shown by Wesson,

that the normal ureter cannot be ruptured by overdilatation but that the injected fluid when under pressure breaks through into the parenchyma of the kidney at the minor calices. If the kidney has already been torn it does not require much pressure to aggravate the tear. When from three to four weeks or more has passed there is probably little contraindication to retrograde pyelography, but here also intravenous urography will give as much information. Drs. Rusche and Bacon have presented a comprehensive review. The fifty cases of ureteral injury which they have assembled represent the largest series of cases reported. The subject of prevention and management of injuries to the lower ureter following pelvic operations is of interest to surgeons as well as urologists. All will agree that preliminary ureteral catheterization is of great value in the prevention of surgical injuries. When the damage is discovered at the time of operation, attempt to repair should be made.

DR. JAMES C. SARGENT, Milwaukee: There have been certain signs and symptoms associated with renal injury which I have come to hold in ever increasing respect; certain others I have learned gradually to disregard. Hematuria, even of the frankest sort, has come to mean less and less to me as a guide to the gravity of an injury because I have observed dozens of cases in which the renal bleeding promptly stopped and the patient recovered. Similarly, I have come to question the worth of intravenous urography except, perhaps, as the roughest sort of a preliminary survey in cases of injury in which the urinary tract is suspected. On the other hand I have developed an ever increasing respect for shock, either past, present or probable. Nothing can justify a nephrectomy in the presence of shock and I should want the indications to be exact and impelling to lead me to operate on a patient who had been in heavy shock recently or in whom shock might reasonably be anticipated. I agree with Davis that "in some cases it is beyond the power of any human being to remove the kidney and save the patient." The only reliable basis on which the question of surgical intervention can be decided is an intimate knowledge of the type and extent of the renal injury. Retrograde pyelography, done with the best of x-ray equipment, must come to be routine in all cases of accident in which injury to the kidney is fairly suspected. I have no issue with those who point to the hazards of such a radical regimen. I admit them freely but still insist that in their sum total they do not equal the hazards of case management without it. A good retrograde pyelogram will show if there is perirenal rupture and extravasation, and, of vastly more importance, it will show if the parenchyma and the pelvis have been shattered beyond all hope of healing. With the contour of the renal pelvis reasonably well preserved, even though perirenal rupture and extravasation may be clearly evident, one does not expect to meet alarming hemorrhage, and a masterful indifference on the surgeon's part is quite likely to see the patient soon recovered. Conversely, if the contour of the renal pelvis is seen to be blasted beyond recognition there can be no hope whatever for the kidney and but little for the patient unless a propitious time for nephrectomy can be found. Indeed, unless substantial primary shock is present to forbid it, the quicker such a kidney is removed the better.

DR. CHARLES Y. BIDGOOD, Hartford, Conn.: Dr. Farman points out that it is usually easy to establish the fact that a kidney has been injured but often difficult to determine to which one of the various categories the injury belongs. Dr. Prather's simplification of the classification of kidney injuries is adequate and practical. There are four structures which can be injured: capsule, parenchyma, pelvis and pedicle. The damage to one of these alone, or any combination of them, is possible. Dr. Prather points out that accentuation of local manifestations, such as pain and tenderness, usually antedate general constitutional symptoms. In the less severe types of injury the local signs do not increase, and usually there is no abnormality in pulse or blood pressure. If the local signs do increase, operation should be performed before the patient's general condition has changed for the worse. Dr. Farman believes that intravenous pyelograms should be employed only when time is not a factor, and, because it is often unsatisfactory or misleading, retrograde pyelography is to be favored. This is sound advice, and I believe that, if immediate operation

31. O'Connor, V. J.: *Injuries of the Kidney*, Illinois M. J. 69: 541 (June) 1936.

32. Droschl, Hans, and Fink, Herbert: *Deutsche Ztschr. f. Chir.* 240: 199-207, 1937.

is not indicated, intravenous pyelograms should be obtained. If these do not give all the information desired, retrograde fillings should be done. There is some opinion that operation should be performed in all cases as soon as the diagnosis of renal injury is made, regardless of the severity of it. The rationale of this is that, although unnecessary operation will occur, an occasional life may be saved when delay would be fatal. This seems a bit radical in view of the fact that such a large percentage of injuries are minor, and the patient recovers without recourse to surgery. In the majority of instances the decision of whether to operate or not depends on one thing, extravasation. Every one knows the difficulty of determining the presence of a small accumulation of fluid retroperitoneally, whether it is pus, blood or urine. Hence the difficulty of determining the severity of renal injury, because generally the extent of the injury is paralleled by the amount of extravasation. It is agreed that, once extravasation of blood or urine is known to exist, operation is indicated. Dr. Farman's excellent discussion of surgical technic leaves nothing to be added. The aim is to save the patient and then, when possible, the kidney. Drs. Rusche and Bacon's review of the literature and presentation of cases of ureteral injury is outstanding because of its completeness.

DR. JOHN E. HESLIN, Albany, N. Y.: I have no comment to make as to the immediate handling of these cases. Should conservative procedures be carried out, careful observation with x-ray and pyelographic study should follow to prevent the late sequelae of hydronephrosis and calculi mentioned by the authors. Exploration of the kidney when the patient's condition will permit, removal of clot and repair of the kidney may prove to be the more conservative procedure. Drs. Rusche and Bacon point to the rather frequent occurrence of ureteral injuries in pelvic surgery and I feel that their suggestion of the use of ureteral catheters in difficult cases is timely. In their discussion of ureteral injuries associated with cystoscopic manipulations they refer to ten cases of injury in an attempt to remove ureteral calculi. Fear of this complication has made many urologists reluctant to use the various instruments, relying on single or multiple ureteral catheter manipulation. If we could determine all immediate and late complications following attempts at instrumental extraction of ureteral calculi, the open operation for their removal might be the more conservative procedure. An ectopic hydronephrotic kidney filled through a ureteral catheter with skiodan solution gave me an anxious few hours until the true condition was differentiated from puncture of the ureter with the deposit of the solution in the pelvis near the bladder. Dr. Lyle A. Sutton, of the gynecologic service, is preparing a paper on cystoscopic injuries of the ureter and has allowed me to refer to some of his material. Using the Kelly cystoscope in the knee chest position, they do a considerable number of cystoscopies and he has found nine cases in which the ureter was punctured, and all of these mishaps occurred when no definite pathologic condition at the site was suspected or found. The site in a majority of the cases was immediately below the ureteropelvic junction, possibly owing to angling of the ureter at that point in the patient's particular posture. Four operations were performed, with one death, of an elderly patient. Operation consisted of simple drainage to the site of leakage. Five patients treated without operation made uneventful recoveries. No nephrectomies were necessary. He advises intravenous urography on the day following the accident and, with evidence of leakage, simple drainage to the point of puncture, with dilation of the ureter later to prevent stricture.

DR. FRANKLIN FARMAN, Los Angeles: As Dr. Sargent says, injuries to the kidney may be expected to be on the increase unless something is done about the modern traffic situation. All injuries of the kidney should be considered serious and everything done to determine the extent of trauma. When the victim of an accident enters the hospital, catheterization should be done soon unless the patient voids, for in this way traumatic hematuria will be discovered easily. The diagnosis is the most difficult problem. I believe that simple cystoscopy and a retrograde pyelogram are preferable and more dependable for early diagnosis than intravenous urography. If one can determine whether or not an injury of the kidney is

minor, treatment will be simple, but the extent and degree of so many ruptures of the kidney fool us. I am inclined to believe that a conservative policy frequently is not the best method of dealing with a serious situation.

DR. CARL F. RUSCHE, Los Angeles: The material here reported was gathered from the Los Angeles County General Hospital and from two private hospitals. Therefore a large number of surgeons are included. One of the discussers mentioned deligation. We feel that unless it is possible to deligate immediately the procedure is to be condemned. The proof of this conclusion is found in the literature and well demonstrated in our series of cases. Two major surgical procedures occurring within one or two days of each other definitely increases the mortality. The consideration of extravasation in cases of ureteral injury has been a puzzling one. It has been our policy to establish drainage as soon as ureteral perforation has been demonstrated. However, we were surprised in making this survey that, in several of the cases in which a catheter had perforated the ureter and an extravasation was demonstrated, incision and drainage were not instituted and the patient apparently suffered no ill effects.

ROLE OF THE GASTROINTESTINAL TRACT IN PRODUCTION OF CARDIAC SYMPTOMS

EXPERIMENTAL AND CLINICAL OBSERVATIONS

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The clinical significance of gastrointestinal disturbances in the angina pectoris syndrome and other cardiac disorders has been conceded by various authors.¹ Experimental studies, however, have never to our knowledge been reported on the attempt to investigate the relationship and interdependence of the digestive tract and cardiovascular disease in the human subject, such as this report entails.

This study was first suggested to us by several observations. First, several of our patients with angina pectoris and gastrointestinal disturbances had for some time experienced indifferent results from the usual methods of management of angina pectoris, including administration of the xanthine derivatives (theophylline, theophylline with ethylene diamine) as well as glyceryl trinitrate, curtailment of activity and other measures.

On intensive therapy directed to the gastrointestinal tract much better clinical results were obtained for the first time in the diminution of the frequency and intensity of paroxysms of anginal pain. Second, great interest was aroused by the hypothesis that angina

The Sandoz Chemical Works, Inc., supplied a belladonna, phenobarbital and ergotamine preparation for these studies (Bellergal).

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Dr. Robert Peckam and Dr. Hugo Roesler, chief of Cardiac Service B of Temple University Hospital, gave aid and advice.

Read before the Section on Gastro-Enterology and Proctology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Babcock, R. H.: Chronic Cholecystitis as a Cause of Myocardial Incompetence, *J. A. M. A.* 52:1904 (June 12) 1909; Diagnosis of Chronic Cholecystitis Complicating Cardiac Lesions, *ibid.* 73:1929 (Dec. 27) 1919. Brooks, Harlow: Abdominal Signs and Symptoms of Thoracic Disease, *Rev. Gastroenterol.* 3:143 (June) 1936. Williams, F. A., and Fitzpatrick, J. M.: Relationship of Chronic Infection of the Gallbladder to Disease of the Cardiovascular System, *J. Iowa M. Soc.* 15:589 (Nov.) 1925. Schwartz, Morris, and Herman, Albert: The Association of Cholecystitis with Cardiac Affections, *Ann. Int. Med.* 4:783 (Jan.) 1931. Brooks, Harlow: Gastrointestinal Manifestations and Coronary Thrombosis, *Tr. Am. Gastro-Enterol. A.*, 1932, p. 312. Wolffe, J. B., and Digilio, V. A.: Gastrointestinal Factors in Angina Pectoris, *Tr. Am. Therap. Soc.*, 1937-1938, p. 103. Kalk, H., and Koelsch, K.: Ueber die Auflösung, von Veränderungen der Herzkronkurve beim Menschen vom Hiatus oesophagus aus, *Ztschr. f. klin. Med.* 135:537, 1939. Miller, Heyman R.: Angina Pectoris, Baltimore, Williams & Wilkins Company, 1939, p. 22. Fitz-Hugh and Wolferth.²³

pectoris was due to acute spasmodic incoordinated contractions of the esophagus and stomach, set up by local "gas traps" and gaseous pressure. This idea was originally postulated by Verdon² in a series of articles and in his book in 1920 and was recently reiterated by the Jacksons, of Cincinnati.³ They believed that they had presented experimental proof of this by electrical stimulation of the esophagus in the dog. Electrical stimulation, carried out by electrodes placed in the esophagus, produced irregularities in cardiac activity. They then proposed this as experimental evidence of Verdon's and their own hypothesis. Third, we noted that, during pneumatic dilation of the esophagus for cardiospasm or preventriculosis, substernal pain with radiation simulating anginal pain would occasionally occur.

Briefly stated, Verdon's belief in esophageal and gastric spasm as the cause of angina pectoris was based on the clinical fact that attacks of angina may not infre-

have been recorded by von Bergmann,⁴ who described the occurrence of angina-like pain in diseases of the esophagus and termed it the "epiphrenale syndrom." This was corroborated by Lunedei and Giannoni.⁵ Lendrum⁶ has reported sudden deaths from cardiospasm from unknown causes in four of thirteen cases examined post mortem.

Weiss and Ferris⁷ and Iglauer and Schwartz⁸ similarly have reported instances of heart block and auricular fibrillation in cases of cardiospasm. They accounted for this occurrence on the basis of a "vagovagal" reflex or "vagovagal syncope." Similarly, Edeiken^{9a} has reported observations on angina pectoris in patients with cardiospasm.

EXPERIMENTAL METHOD

We attempted to investigate the behavior of the esophagus and stomach during typical attacks of angina pectoris and to determine the esophageal and gastric

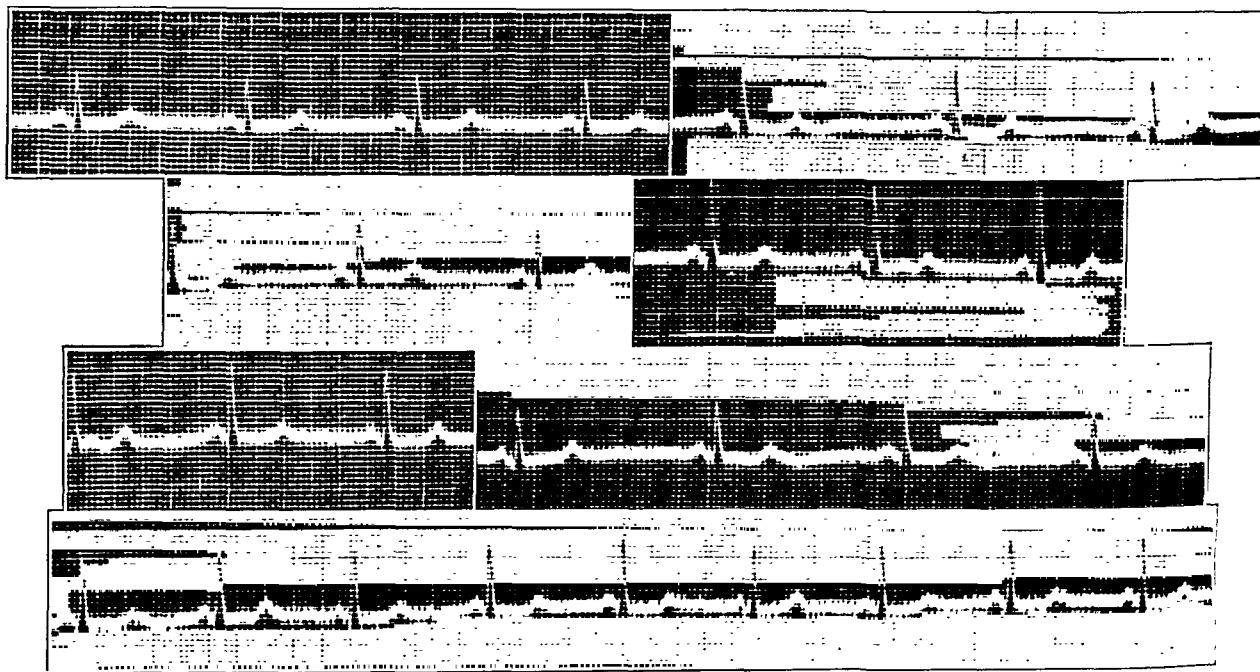


Fig. 1 (case 1).—Angina pectoris: Upper left, control, normal lead 1. All other electrocardiograms were taken with the balloon in the upper, lower or middle part of the esophagus and the stomach. Distention pressure in the balloon was from 30 to 50 mm. of mercury for very brief characteristic anginal pain. RT alterations throughout are not marked, since minimal pressures were used cautiously because of danger (fig. 2).

quently terminate in belching or gaseous eructations. He reasoned therefore that the attack was precipitated by accumulation of pockets of gas "locked" or "trapped" in the stomach or esophagus, which then caused esophageal and gastric spasmodic contractions. When the gas was belched up, he thought, the attack was halted, since the esophageal spasm also stopped. In support of this concept he cited the fact that attacks occur after meals or on walking after meals. He also practiced gastric intubation during the more prolonged attacks and recorded that he could always abort or terminate an attack as soon as the tube was passed, and gas would pass out of the tube. The Jacksons voiced and amplified the same beliefs, based on their own clinical data and experiments on dogs.

Other observations on esophageal diseases such as cardiospasm and herniations with cardiac disturbances

muscular behavior simultaneously with observations on cardiac activity. Other patients with heart disease volunteered for the same experiments. Two methods suggested themselves:

(a) An apparatus could be used which at one and the same time, by inflating balloons in the esophagus and stomach at different levels, would induce a paroxysm of anginal pain, if possible, and would record the esophageal and gastric behavior while electrocardio-

4. von Bergmann, G.: Das "epiphrenale Syndrom," seine Beziehung zur Angina pectoris und zum Kardiospasmus, Deutsche med. Wchnschr. 58: 605 (April 15) 1932.

5. Lunedei, A., and Giannoni, A.: Tentativo di riproduzione sperimentale nell'uomo della sindrome epiphrenica e della angina pectoris d'origine gastrica, Riv. di clin. med. 35: 569 (Aug. 30-Sept. 15) 1934.

6. Lendrum, F. C.: Anatomic Features of Cardiac Orifice of Stomach, Arch. Int. Med. 59: 474 (March) 1937.

7. Weiss, Soma, and Ferris, E. B.: Adams-Stokes Syndrome with Transient Complete Heart Block of Vagovagal Reflex Origin: Mechanism and Treatment, Arch. Int. Med. 54: 931 (Dec.) 1934.

8. Iglauer, Samuel, and Schwartz, B. A.: Heart Block Periodically Induced by Swallowing of Food in Patient with Cardiospasm (Vagovagal Syncope), Ann. Otol., Rhin. & Larynx. 45: 875-880 (Sept.) 1936.

9a. Edeiken, Joseph: Angina Pectoris and Spasm of the Cardia with Pain of Anginal Distribution on Swallowing, J. A. M. A. 112: 2273 (June 3) 1939.

2. Verdon, Walter: Angina Pectoris, London, Baillière, Tindall & Cox, 1920.

3. Jackson, D. E., and Jackson, H. L.: J. Lab. & Clin. Med. 21: 593 (July) 1936.

graphic records were being made. Balloon distention could also be made in other patients with known heart disease, to record the cardiac behavior during distention of the stomach and esophagus.

(b) If this method should fail, anginal pain could be effected by forced exercise. Fortunately, the latter method was unnecessary owing to the success of the former.

Four clinic patients who volunteered for the experimental studies were selected. They had been treated by other members of Cardiac Service B for periods up to four years and their conditions were diagnosed and filed as two typical cases of angina pectoris, one case of hypertensive heart disease and one case of arteriosclerotic heart disease. The two patients with angina had characteristic substernal pain on exertion (Heberden's angina) with radiation of pain and had immediate relief on ceasing activity or on placing glyceryl trinitrate under the tongue. The site and type of pain are depicted in the illustrations.

The apparatus consisted essentially of a toy balloon attached to a stomach tube of the regulation caliber, which in turn was connected to a glass tube. This was continuous with (a) a rubber bag for inflation of air and pressure into the system and (b) a mercury manometric column tube stand. The latter, via a tam-bour and stilet, delicately transmitted all muscular behavior to a revolving kymographic drum, rigged up

not be undertaken for several years. This anginal patient had a severe and characteristic paroxysm of anginal pain radiating down the inner sides of both arms. No changes in the electrocardiograms and no changes in any of the esophageal and gastric kymographic recordings of muscular activity were recorded, showing that the esophagus and stomach are "silent" during anginal seizures in this case.

Patient 4 (hypertensive heart disease) showed electrocardiographic but no kymographic changes during induced distention of the stomach and esophagus causing epigastric and substernal pain.

Patient 1 developed many and various types of alterations in the RT segment of all electrocardiograms taken during anginal pain, as shown in figures 1 and 2. While the gastric dilation was made, total cardiac standstill occurred during the anginal paroxysm. This was perhaps a sinus block, and at the time this was not noted; but the patient was in acute pain and fainted and, at the moment of release of intragastric pressure, normal cardiac rhythm was reestablished, as indicated by the kymographic record, although the patient presented evidence of shock.

Patient 4 (hypertensive heart disease) similarly showed during each distention many and varied types of alterations in the RT segments of the electrocardiograms in addition to evidences of ventricular irritability (fig. 3). As in the previous cases no disturbances in

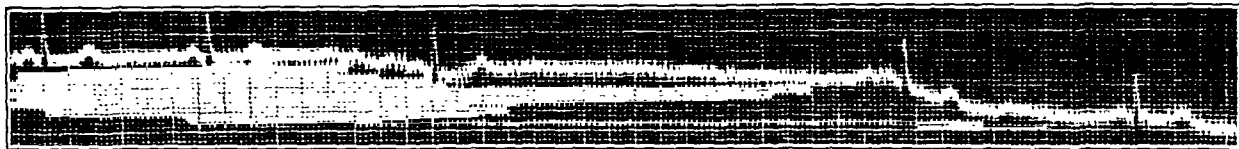


Fig 2 (case 1).—Cardiac standstill with balloon distention in the stomach. Pressure of 60 mm. of mercury was used, with an excruciating anginal paroxysm and temporary unconsciousness. On immediate relief of balloon pressure there was a slow return to normal rhythm.

with an automatic timer. Electrocardiographic tracings were made prior to, during and after anginal paroxysms were produced; tracings were made also during distention of the esophagus and stomach in the nonanginal cardiac cases.

Subsequently this balloon method of recording was found to be analogous to that used in 1883 by Kronescher and Meltzer.⁹ The water bag method employed by Payne and Poulton¹⁰ was deemed too slow in registration, since the severity and serious danger of the pain contraindicated prolonged recordings. In each case air inflation and pressure were maintained until the pain could not be borne any longer, whereupon pressure was immediately released when the patient signaled with his hand. In the two anginal cases the induced pain was identical with that experienced during typical anginal pain from exertion. In each case the balloon was guided fluoroscopically into the stomach and into the upper, middle and lower thirds of the esophagus, with recordings at these levels.

RESULTS

In the two anginal patients (1 and 2) typical anginal seizures occurred at each level of the esophagus and stomach, requiring between 40 and 60 mm. of mercury. Patients 3 and 4 experienced a feeling of severe epigastric distress and substernal fullness. Clinically after the treatment outlined later, patient 2 failed to experience pain even on moderate physical exertion, which could

the esophageal or gastric behavior of this patient were recorded.

As evidenced by the negative kymograms of patients 1 and 2 taken during and after anginal attacks, the esophagus and stomach are "silent" during paroxysms of angina pectoris. This refutes the assertions of Verdon² and the Jacksons.³

Weiss and Davis¹¹ investigated the effect on the heart of distention of various portions of the esophagus in a group of normal subjects. No cardiac abnormality or irregularity was found in any case.

Previous reports in the literature¹² of electrocardiograms taken by coincidence or with forced physical exertion during seizures present evidence of significant changes in the tracings, particularly in the ventricular deflections during the anginal attack, with the exception of the articles by Wood and Wolferth¹³ and by Faleiro.¹⁴ These changes were taken as support of the

9. Kronescher, H., and Meltzer, S.: *Arch. f. Anat. u. Physiol.*, 1883, supp., p. 328.

10. Payne, W. W., and Poulton, E. P.: *Experiments on Visceral Sensation*, *J. Physiol.* 63: 217-219 (Aug.) 1927.

11. Weiss, Soma, and Davis D.: *The Significance of the Afferent Impulses from the Skin in the Mechanism of Visceral Pain*, *Am. J. M. Sc.* 176: 517 (Oct.) 1928.

12. Borishfield, G.: *Lancet* 2: 457, 1918. Arrillaga, F. C.: *Electrocardiograms in Cardiac Insufficiency*, *Bull. et mèm. Soc. mèd. d. hôp. de Paris* 48: 1493 (Nov. 7) 1924. Clerc, A.: *Presse mèd.* 35: 499 (April 20) 1927. Feil, Harold, and Seigel, M. L.: *Electrocardiographic Changes During Attacks of Angina Pectoris*, *Am. J. M. Sc.* 175: 255 (Feb.) 1928. Gallavardin, L., and Rougier, Z.: *Paris mèd.* 2: 15 (July 7) 1928. Parkinson, J., and Bedford, D. E.: *Electrocardiographic Changes During Brief Attacks of Angina Pectoris*, *Lancet* 1: 15 (Jan. 3) 1931. Wilson, Frank N., in Leyy, R. L.: *Diseases of the Coronary Arteries and Cardiac Pain*, New York, Macmillan Company, 1936, fig. 85, p. 323. Wood and Wolferth.¹³ Faleiro.¹⁴

13. Wood, F. C., and Wolferth, C. C.: *Angina Pectoris: Clinical and Electrocardiographic Phenomena of the Attack and Their Comparison with the Effects of Experimental Temporary Coronary Occlusion*, *Arch. Int. Med.* 47: 339 (March) 1931.

14. Faleiro, Antonio: *Der "Arbeitsversuch" in der elektrokardiographischen Diagnose der Angina pectoris*, *Deutsches Arch. f. klin. Med.* 179: 238 (Sept. 4) 1936.

theory of the coronary spasm or the functional myocardial ischemia mechanism as the cause of angina pectoris.

The electrocardiographic tracings of patient 2, which were entirely unchanged during the anginal paroxysms, support Wood and Wolferth's contention that coronary spasm or functional myocardial ischemia is not the only factor in the pathogenesis of anginal seizures. In view of the complete cardiac standstill encountered in case 1 and because of the case reported by Wilson¹⁵ in which death occurred thirty minutes after a test exercise to induce anginal pain, experimental methods of induction of angina pectoris should not be used without an understanding of the possibly fatal outcome, as well as the precipitation of acute angina.

PHYSIOLOGIC CONSIDERATIONS

Nerve Pathways.—It is evident that a reflex nerve arc between the upper part of the digestive tract and the heart is involved during the paroxysms of angina in the cases herein reported. This is shown by the fact that consistent and analogous changes in the electrocardiograms were produced by the distention of the balloons from the stomach to the uppermost level of the

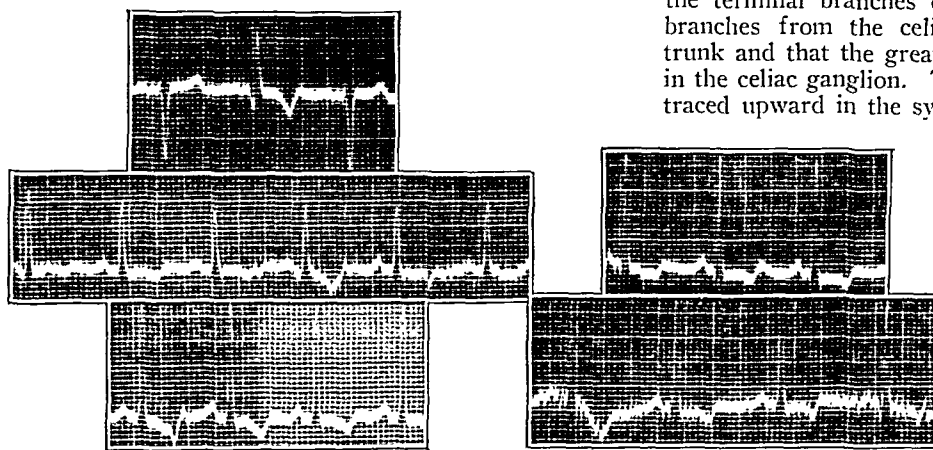


Fig. 3 (case 4).—Hypertensive heart disease: Upper left, electrocardiogram lead 3 showing an example of constant ventricular irritability throughout attacks. Other tracings are lead 1, with the balloon in the upper, lower and middle part of the esophagus and the stomach, under pressures of from 25 to 40 mm. of mercury. RT changes are noted during induced severe seizures of epigastric and substernal distress from experimental balloon distention in the stomach and esophagus.

esophagus in three of the four cases. The nerve control of the latter structures is predominantly vagal, as well as involving the sympathetic nerve fibers. The only modification was the additional complete auriculo-ventricular standstill which occurred in case 1 when the attack was produced through distention of the stomach. This may have been due to a stronger vagal effect from the stomach than that occurring from the esophagus or to a greater threshold of vagal irritability in the stomach. The same mechanism of vagal reflex control from the stomach and esophagus to the heart is demonstrated in case 4, in which hypertensive heart disease was present with moderate left ventricular enlargement.

Similarly, the cases of pathologic physiology in which cardiospasm produced heart block, the Adams-Stokes syndrome or vagovagal syncope, previously referred to,¹⁶ illustrate perfectly this reflex nerve arc from the esophagus to the heart.

The stimulus of esophageal distention occurring in the cases of cardiospasm was the apparent precipitating factor. The condition of Weiss and Ferris's⁷ patient

was so severe that she attempted suicide, since merely swallowing food regularly induced fainting from heart block (Adams-Stokes syncope). This patient, as the patients of Iglauder and Schwartz,⁸ responded completely to doses of atropine.

Although the vagus nerve has no known sensory afferent fibers from the esophagus and stomach and the sensation of pain from these organs cannot be propagated directly by the vagus, still it is well known that unconscious stimuli resulting in vasomotor (constrictor) and reflex inhibitory changes in the heart are transmitted by the vagus. Ranson,¹⁷ and Ranson and Billingsley¹⁸ and Stohr¹⁹ have shown by histologic studies and Heinbecker²⁰ has shown by studies in electrical conduction that both the vagal and the sympathetic cardiac rami are mixed sensory-motor nerves and have termed these afferent constituents the "viscero-sensory" fibers. This is extremely significant in view of the anatomic fact that the ganglion nodosum of the vagus and upper sympathetic thoracic ganglions originate axons which pass directly and uninterruptedly to sensory endings in the heart and coronary arteries. However, it should not be forgotten that the stomach is innervated, aside from the terminal branches of the right and left vagi, by branches from the celiac plexus of the sympathetic trunk and that the greater splanchnic nerve terminates in the celiac ganglion. This has branches which can be traced upward in the sympathetic trunk as high as the

first or second sympathetic thoracic ganglions, which are among the direct transmitters of sensory pathways for pain in the heart. Likewise, besides the esophageal branches of the vagus, the sympathetic trunks contribute plexuses of nerves which form a group of ganglion cells between the two layers of the muscular coats and in the submucous tissue of the esophagus.

By virtue of these intimate nerve relationships the ease by which nerve im-

pulses, vasomotor stimuli and reflexes are interchangeable between the esophagus, the stomach and the heart is readily apparent (Spiegel²¹).

Vasomotor Studies.—Brown-Séquard²² was the first who believed, in 1854, that cardiac behavior, after stimulation of the vagus and sympathetic (accelerator) nerves, did not result from direct effect on muscular contraction but was due to vasomotor reactions.

This problem has been investigated by a large group of observers who tend to believe that vasoconstrictor fibers are carried mainly in the vagus and dilators in the sympathetic nerves.²³ They have shown that the

17. Ranson, S. W.: Non-Medullated Nerve Fibers in the Spinal Nerves, *Am. J. Anat.* 12: 67, 1911.

18. Ranson, S. W., and Billingsley, P. R.: The Superior Cervical Sympathetic Ganglion and the Cervical Portion of the Sympathetic Trunk, *J. Comp. Neurol.* 23: 313, 1918.

19. Stohr, P., Jr.: *Mikroskopische Anatomie des vegetativen Nervensystems*, Berlin, Julius Springer, 1918.

20. Heinbecker, Peter: *Anatomic and Physiologic Criteria for Surgical Relief of Cardiac Pain*, *J. Thoracic Surg.* 2: 517 (June) 1933.

21. Spiegel, E. A.: Ueber das Wesen des Bauchschmerzes und seine Begleiterscheinungen, *Wien. med. Wchnschr.* 77: 379, 1927. Spiegel, E. A.: Visceral and Vascular Pain, *Proc. Staff Meet., Mayo Clin.* 5: 213-214 (July 30) 1930.

22. Brown-Séquard, C. E.: Des effets de la section des nerfs vagues sur la force du coeur, *Gaz. méd., Paris* 9: 135-136, 1854.

23. Wiggers, C. J.: The Innervation of the Coronary Vessels, *Am. J. Physiol.* 24: 391, 1909. Anrep and Segall.²⁴ *Rein.*

15. Wiggers, C. J., in Levy, R. L.: *Diseases of the Coronary Arteries and Cardiac Pain*, New York, Macmillan Company, 1936, p. 96.
16. Von Bergmann,⁶ Lunefei and Giannoni,³ Lendrum,⁹ Weiss and Ferris.⁷

parasympathetic vagal centers are the source of vagal constrictor fibers and that they can be thrown out of action by atropine. Wiggers²⁴ stated that vasoconstrictor branches emerge in the thoracic sympathetic outflow because the vagus trunk receives sympathetic branches from the superior cervical ganglion. These vasoconstrictor branches travel up into the cervical sympathetic chain to the superior cervical ganglion, cross to the ganglion nodosum and then pass down the vagosympathetic division to the heart.

As Wiggers²⁴ pointed out, most observers are inclined to agree with Anrep and Segall,²⁵ Hochrein and Keller²⁶ and Rein,²⁷ who stated the belief that tonic constrictor action is carried on by fibers from the vagus nerves. However, this controlling factor is still *sub judice*, and just as Porter²⁸ in 1896 believed that he brought forward conclusive experimental evidence that the vagus contains vasoconstrictor fibers but later²⁹ modified his views, so have other investigators³⁰ stressed the important role of the sympathetic dilators acting through the stellate ganglion and reflexly affecting the coronary flow.

On the other hand, Anrep and Segall³¹ have shown conclusively that the vagus mechanism predominates in a tonic control of the coronaries and that this control can be reflexly inhibited. They demonstrated that the coronary flow is increased after vagotomy and that, although vagotomy will directly influence this coronary flow, no such effect occurs after removal of the stellate ganglion. Rein's observations²⁷ substantiated this view. It therefore becomes readily apparent how it is possible for stimuli from the vagal endings, as well as from the sympathetics during disturbances in the esophagus and stomach, to produce vasomotor changes in the coronary circulation resulting in "spasm" or ischemia or equivalents in the production of clinical pain of anginal nature or other myocardial dysfunction.

CLINICAL INFERENCES

A significant feature indicated by this study is the experimentally demonstrated fact that gas formation in the stomach or esophagus can, by accumulation and the distention of the viscus, directly produce severe cardiac derangement. Thus there may occur a paroxysm of angina pectoris or other vitally dangerous effects on the heart. In the nonanginal case, these dangerous sequelae are liable to occur with fatal results (patient 1). These "attacks" are promptly relieved by the quick release of the experimental distention, which is equivalent to the clinical observation that patients often terminate an anginal seizure or other acute symptoms referable to cardiac embarrassment by eructations of gas, as in belching.

This has particular reference to the anginal patients with disorders and disturbances of the upper part of the gastrointestinal tract. Here the state of irritability or the sensitivity of the digestive tract, probably acting through the vagus nerve and possibly through the sympathetic branches as well, opens a reflex nerve arc which can act as though a hair trigger were present in the upper

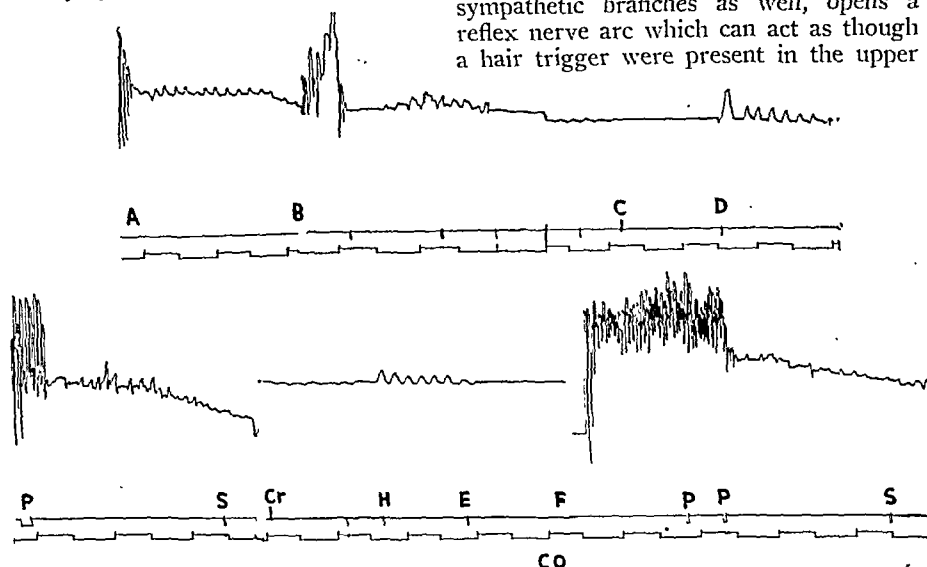


Fig. 4 (case 1).—Kymographic recordings of esophageal and gastric behavior through a balloon from the upper, lower and middle part of the esophagus and the stomach during typical anginal paroxysms. Upper row: left, control, midesophagus before induction of attack; center, normal peristaltic movements during anginal seizure; upper right, CD, "silent" esophagus during angina. Lower row: left, control in stomach before attack; center, CrH, slight gastric movements; HE, normal peristaltic movements; EF, "silent"; right, PS, normal peristalsis during anginal seizure. Superimposed movements of tracing are due to cardiorespiratory activity.

part of the digestive tube. On stimulation this effects a sudden change in the coronary vessel or myocardium, or whatever mechanism it is that produces anginal pain, and other sudden cardiac changes involving syncope or even sudden death with or without coronary occlusion.

This may be manifested as the sudden death occurring in cases formerly labeled "acute indigestion," and even after Herrick's explanation³² of those cases on the clinical basis of coronary death or deaths due to ventricular fibrillation or standstill, although the coronaries were found to be normal by the pathologist. This point has been demonstrated recently in the series of cases with autopsies studied by Levy and Bruenn.³³ Numerous pathologists and cardiologists³⁴ have reiter-

24. Wiggers, C. J., in Levy, R. L.: Diseases of the Coronary Arteries and Cardiac Pain, New York, Macmillan Company, 1936, p. 97.

25. Anrep, G. V., and Segall, H. N.: The Regulation of the Coronary Circulation, Heart 13: 239 (Sept.) 1926.

26. Hochrein, M., and Keller, C. J.: Untersuchungen um Koronar-system: III. Der Druck in den Koronararterien, Arch. f. exper. Path. u. Pharmacol. 160: 66, 1931; IV. Der Einfluss der Blutdruckzügler (H. E. Hering) auf die Koronardurchströmung, ibid. 160: 205, 1931. Hochrein, M.; Keller, C. J., and Mancke, R.: Die Durchströmung der Koronararterien, ibid. 151: 146, 1930.

27. Rein, H.: Die Physiologie der Herz-Kranz-Gefäße, Ztschr. f. Biol. 92: 101 and 115, 1931.

28. Porter, W. P.: The Vasomotor Nerves of the Heart, Boston M. & S. J. 134: 39, 1896.

29. Porter, W. P.: Circulation: III. The Nutrition of the Heart, in Howell, W. H.: An American Text-Book of Physiology, Philadelphia, W. B. Saunders Company, 1901, vol. 1, p. 179.

30. Greene, C. W.: The Nerve Control of the Coronary Vessels with New Experimental Evidence for the Pathways of Efferent Constrictor and Dilator Neurones in the Dog, Am. J. Physiol. 113: 361 (Oct.) 1935; Control of the Coronary Blood Flow by Reflexes Arising on Widely Distributed Regions of the Body, ibid. 113: 399 (Oct.) 1935; An Analysis of the Relations of the Coronary Constrictor and Dilator Nerves in the Cervical Vagosympathetics of the Dog, Am. Heart J. 11: 592 (May) 1936. Hinrichsen, Josephine, and Ivy, A. C.: Effect of Stimulation of Visceral Nerves on Coronary Flow in Dogs, Arch. Int. Med. 51: 932 (June) 1933.

31. Anrep, G. V., and Segall, H. N.: The Central and Reflex Regulation of the Heart Rate, Am. J. Physiol. 61: 215 (April) 1926.

32. Herrick, J. B.: Clinical Features of Sudden Obstruction of the Coronary Arteries, J. A. M. A. 59: 2015 (Dec. 7) 1912.

33. Levy, Robert L., and Bruenn, H. G.: Acute Fatal Coronary Insufficiency, J. A. M. A. 106: 1080-1085 (March 8) 1936.

34. Reid, W. D.: Mechanism of Angina Pectoris, Arch. Int. Med. 34: 137 (Aug.) 1924. Cabot, Richard C.: Facts on the Heart, Philadelphia, W. B. Saunders Company, 1926, p. 551. White, Paul D.: Heart Disease, ed. 1, New York, Macmillan Company, 1931, p. 160. Brooks, Harlow, in Cecil, R. L.: Text-Book of Medicine, ed. 3, Philadelphia, W. B. Saunders Company, 1933, p. 1169. Gallavardin, L.: Les angines de poitrine, Paris, Masson & Cie, 1923, pp. 160-161.

ated the observation that not infrequently anginal patients are found post mortem without the customarily observed coronary sclerosis, thrombosis or occlusion, infarction or myocardial fibrosis, or any disease process.

It may be inferred from the probably complete sinus block occurring from gastric distention in case 1 that the patients formerly mentioned as dying of "acute

tem, demulcent medication, gastric and pancreatic enzymes, the use of sympathetic nerve sedatives such as ergotamine tartrate and the employment of the synergistic action of sedatives like phenobarbital.

Hygienic care, mentioned as *c*, should be focused first on dietary regimen, establishing low carbohydrate intake, particularly of the foods tending to gas forma-

tion, and the elimination of sweets, pastries, condiments and hot and cold foods. Attention must be paid to small frequent feedings, avoidance of overeating and overindulgence in tobacco and alcohol, the careful and thorough mastication of food, short rests prior to and immediately following food ingestion, the adherence to the smooth, bland type of diet, and in the more severe cases avoidance of all but strained vegetables. The dictum "never to eat when fatigued or nervously distraught" should be rigidly adhered to. Great care must be taken of the bowel function, avoiding laxatives and purgatives but employing nonirritant lubricants such as liquid petrolatum,

refined psyllium seed combinations and the mild saline aperients as contained in the spa waters. Abdominal support as suggested by Kerr for anginal patients has long been used by gastro-enterologists in selected cases with encouraging results. The exact therapeutic mechanism is not understood, since it is known that most of the patients show no elevation of the digestive organs under x-ray study despite the presence of visceroptosis and yet are often definite in noting relief of digestive complaints.

A significant fact has been discovered by Katz,³⁶ that ingestion of sodium bicarbonate appreciably delayed the pain experienced by human subjects in the exercis-

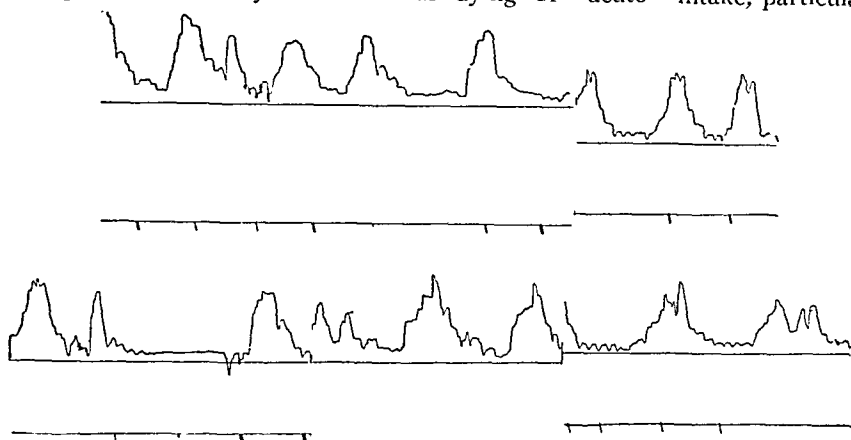


Fig. 5 (case 2).—This tracing, like figure 4, shows normal esophageal and gastric peristalsis, unaltered throughout induced attacks of angina pectoris.

indigestion," cardiac syncope, status anginosus or a "coronary" condition, with the heart normal at autopsy, may have died from reflex ventricular standstill or fibrillation of gastrointestinal origin. In this patient (fig. 2) it appeared that the standstill would have continued, probably with fatal outcome, if the pressure had not been immediately relieved. Acute anginal pain, immediately followed by transient unconsciousness, was experienced simultaneously.

THERAPEUTIC INDICATIONS

The experiments reported herein point to the predominant vagal influence in sensitizing the pain pattern in angina pectoris and to direct medication which would (a) dull or decrease the sensitivity or irritability of the vagus nerve or autonomic nerve system, (b) decrease or nullify any tendencies to gastrointestinal disturbances in motility, secretion and general function and (c) regulate the hygiene of the digestive tract to remove or minimize any additional noxious influences on the vagus or autonomic nerve system, to be accomplished by strong antispasmodics, which must be given in saturation dosage, shown by Bastedo³⁵ to be effective. Atropine, belladonna and derivatives are strongly indicated in the control of angina associated with any gastrointestinal symptoms or disturbances.

Iglauer and Schwartz⁸ and Weiss and Ferris⁷ were able to abolish completely the heart block of their esophageal patients with cardiospasm by the use of atropine. This shows the attacks to have been in the nature of a vagovagal reflex, precipitated by irritation of the vagal receptors in the esophagus and stomach. This substantiates our concept of the intimate vagal and sympathetic nerve relationship existing between the upper gastrointestinal tract and the heart in patients with cardiac and digestive difficulties. It is apparent, therefore, that the atropine-belladonna group of drugs should be incorporated as a routine medicament for these persons.

The objective designated as *b* can be achieved by antacid alkali powders and incorporation of calcium preparations for sedative action on the autonomic sys-

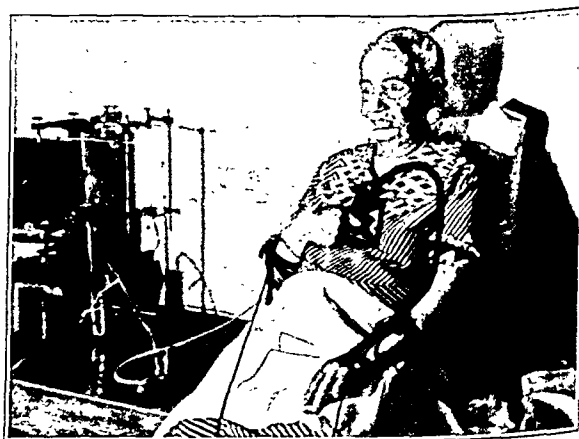


Fig. 6.—Recording apparatus and site of anginal pain with radiation in one case.

ing arm. This was held as evidence of the P substance which Lewis, Pickering and Rothschild³⁷ believed representative of the accumulation of the metabolic products formed by contracting muscle. These products

36. Katz, L. N.: Mechanism of Pain Production in Angina Pectoris. *Am. Heart J.* 10: 322 (Feb.) 1935.

37. Lewis, Thomas: Pain in Muscular Ischemia: Its Relation to Anginal Pain. *Arch. Int. Med.* 49: 713 (May) 1932. Lewis, Thomas; Pickering, G. W., and Rothschild, Paul: Observations upon Muscular Pain in Intermittent Claudication. *Heart* 15: 359 (July) 1931.

35. Bastedo, W. A.: Value of Atropine and Belladonna in Stomach Disorders. *J. A. M. A.* 106: 85 (Jan. 11) 1936.

are thought to be identified with lactic acid and comprise the chemical stimuli to the pain endings in the heart.

Relying on these observations, we are administering alkali powders in accordance with the same idea, to reduce the threshold for the pain endings in the heart as well as for gastric antacid effect. An attempt at alteration of the blood p_H is thus made, and since the P substance is acid in character, the increase in blood alkalis may therefore tend to neutralize the P substance and reduce the threshold for cardiac pain or its equivalents.

The measures just described would naturally be aided by the usual therapeutic adjuvants, including the xanthine group of derivatives such as theophylline with ethylene diamine, glyceryl trinitrate, curtailment of strenuous exertion, either mental or physical, and similar treatment and more gratifying clinical results will thus be obtained than by one regimen per se.

Studies are planned on a controlled group of patients in private and clinic practice who have been studied and placed on varying combinations at different times of the drugs just mentioned. Many of these patients during the past years have shown surprisingly encouraging symptomatic improvement and reports will be made after the lapse of more time for controlled and critical observations on a larger group of patients, with different types of treatment.

The physiologic rehabilitation of a vulnerable and disordered gastrointestinal tract associated with the anginal syndrome may thus be analogous to the marked improvement and clinical cures reported by Fitz-Hugh and Wolferth³⁸ of patients with angina or myocardial or coronary diseases following cholecystectomy for gallstones. These authors made the original contribution of demonstrating the return to normal of inverted SR segments in electrocardiographic leads 1, 2 and 3 as early as six weeks after cholecystectomy for stones. The disappearance or improvement of various cardiac symptoms, including anginal pain, was frequently noted.

No better demonstration of the reversibility in this direct relationship between the gallbladder and heart could be made and corroborated by the electrocardiographic recordings. Similarly it is our contention, based on the evidence submitted, that a corresponding influence on the heart can be wrought by functional as well as organic disorders of the esophagus and stomach. These can frequently be combated successfully by the treatment described.

SUMMARY

1. A reflex nature in acute cardiac seizures and attacks of angina pectoris in patients with gastrointestinal disturbances was demonstrated as springing probably from the vagal nerve arc originating in the stomach and esophagus. This was accomplished by an experimental method simulating gaseous distention and flatulence.

2. Experimental evidence was obtained demonstrating sudden cardiac changes from acute gaseous distention. This was reproduced in the upper digestive tract of patients with heart disease.

3. The temporary cardiac standstill from distention in the stomach of one patient indicates that by a reflex it is possible to cause sudden deaths from cardiac standstill in this manner. In this patient cited, the heart resumed beating immediately on the release of the

intra-gastric balloon distention, during a paroxysm of anginal pain, which was immediately followed by temporary unconsciousness.

4. For that large group of cardiac patients with such digestive disturbances as gaseous distress, flatulence and dyspepsia, methods of ameliorating the intensity and frequency of cardiac distress or anginal seizures were developed by combinations of drug, dietary and hygienic therapy as a routine procedure.

5. Acute spasmodic incoordinated movements of the esophagus and stomach are not the cause of attacks of typical angina pectoris and do not occur during them, as stated by certain observers.

6. Electrocardiographic studies during characteristic anginal attacks induced through the digestive tract revealed significant ST segment changes in one case and a complete temporary cardiac standstill in another when the attack was initiated by distention in the stomach.

7. One patient registered no electrocardiographic changes during anginal paroxysms. This is offered as corroboration of the concept that the coronary arteries are not the sole factors involved in the production of anginal pain. In this case, in which anginal seizures had completely disappeared under intensive treatment, anginal pain could not be induced experimentally or clinically by moderate exertion.

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GERIATRICS IN RELATION TO AN ADEQUATE ENERGY PRODUCING AND PROTECTIVE DIET

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The word geriatrics, like many expressive medical terms, is derived from the Greek. Masters introduced it in a thesis in 1914. It was suggested by the name of a council of twenty-eight wise elders known as a "gerousia." It is said that to these men "Religion lent an aura and wisdom a shield; what they had accumulated lent wisdom to their heirs." More specifically, the word is compounded from "geron," meaning "old man," and "iatrikos," meaning "medical treatment."

In 1925 Williams featured the endocrine lapses in senescence, and the freudian considerations of personality changes led to much popular discussion of glandular transplants and the surgery of the Voronoff and Steinach school. The turn of the century witnessed much enthusiasm over curtailing "auto-intoxication" through diet and unwise limitation of proteins. Prof. A. S. Warthin carried to a depressing ultimate an analysis of the simple running down of the clock, or "senescence." This symphonic arrangement called attention to the advantage accruing to the individual in the toning down of certain of his organs or faculties and went further to express the advantage to the race through the individual's demise. Indeed, every man has had his own ideas, and those who have made addresses on public health realize how eagerly listeners reach out for dogmatic statements concerning explicit dietary guides for promoting fitness and extending life. Floyer put it this way: "Every man is a fool or becomes a physician when age is upon him."

38. Fitz-Hugh, Thomas, Jr., and Wolferth, C. C.: Cardiac Improvement Following Gall-Bladder Surgery, *Ann. Surg.* 101: 478 (Jan.) 1935.

From the Department of Medicine, the Duluth Clinic.
Read before the Section on Gastro-Enterology and Proctology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

I introduce the term chiefly to present an antidote to the long popular slogan "We dig our graves with our teeth." In my state physicians see some undernutrition due to economic adversity. We see more which is the result of perverseness of appetite in the midst of plenty. The largest group is found, however, among older persons who limit themselves needlessly because of faulty advice or inherent fear. Thus we have no class comparable to the anemic group in Puerto Rico or the pellagrins in the Southland of the United States, where wholesale preventive methods are applicable. Our dietary problems concern certain individuals of highly varied tastes and equally diverse backgrounds. Geriatrics should interest us as physicians not alone in the classic philosophic euphemisms that have lent an aura of repose to the senile in exchange for activities denied. Rather must we take up its practical physical aspects and preach less fear of food with people over the age of 50. I propose to hold my discourse for the most part to that phase of medical direction for the aged.

Economists and sociologists proclaim that we face "a decrease of 50 per cent of nonproducers under 20 in coming decades, with the percentage in the same group over 60 greatly increasing." We are to have a decidedly larger proportion of old people among our patients. Christian¹ has recently fully discussed these issues and their significance.² Internists must cultivate this field and take some lessons from the pediatricians who, with adequate diets and fat soluble vitamins A and D, have done so much for their dwindling clientele. Children have been not only saved as infants but carried through their period of growth and adolescence into a vigor that withstands infections, rheumatic or tuberculous, and rickets and scurvy are indeed rarities. With the senescent group, vitamin B₁, the vitamin B complex and vitamin C play significant roles. The current trend, however, in adjudging undernutrition is to overstress the avitaminoses. When the vitamin lack is proved one should first be assured that this usually points to the broader circumstance that a period of dietary deprivation of essential food elements and minerals has obtained. The stored water soluble vitamins are first to run low when intake is lessened, absorption depressed and energy demand augmented. Limited storage and concurrent use, as with oxygen, lead to a deficiency in which anorexia, vomiting, diarrhea, polyuria, fever, hyperthyroidism, psychic perversion, faddish dieting and many other similar situations obtain. Vitamin B₁ is of the utmost importance in carbohydrate metabolism. Carbohydrate is apt to be the chief constituent with anorexic folk or those put on ill advised diets by their physicians. Castle has said that selecting from these groups is the best present means of finding avitaminoses.

At the present time there is no simple clinical laboratory test which can be applied for avitaminosis B. It

would greatly aid if, for example, there were a test for lack of B₁ comparable to the hemoglobin estimation for iron deficiency. Elvehjem,³ of Madison, Wis., thought that he had a promising test for the level of cocarboxylase (which runs coordinately with vitamin B₁) but the methods followed did not work out. Wobach,⁴ with his associates, has made an earnest attempt to portray the imprint on tissues and organs of the various avitaminoses. He states, "In some instances we have succeeded for the requirements of morphologic characterizations, but with the members of the B group, B₁ and B₂ components, we have failed, possibly because the chemistries involved are common to many tissues and concern energy processes not involving structural maintenance, and hence unaccompanied by distinctive morphological changes." At the same time, researchers have made great advances (biologic and chemical) and many of the vitamins have been identified, crystallized and in some cases synthesized either in the provitamin form, such as carotene, or as the vitamin itself, vitamin B₁, first isolated by Jansen and Donath (1926) and crystallized and synthesized by Williams⁵ and his confrères in 1934 after twenty years of unremitting effort. With this identification and purification it became evident that all vitamin groups are assortments or complexes and that they are less related to one another chemically and physiologically than they are to tissue enzymes, which often overlap with the vitamins.

A stupendous series of articles dealing chiefly with the various vitamins has appeared in the last decade. It has come from biochemists, zoologists, agronomists, physiologists and physicists rather than from the clinical branches of medicine. The manner in which R. R. Williams synthesized vitamin B₁ and gave it the name thiamin (a union of thiazole and pyrimidine), using ultraviolet absorption spectrum methods, illustrates the subtle coordination of the instruments of the related basic sciences to accomplish a modern miracle. As soon as the potentialities of such discoveries were sensed, enormous interest developed. THE JOURNAL opened its columns to a series of articles by research workers beginning with the issue of Feb. 5, 1938, and with only three or four exceptions continuing up to the issue of November 5 of the same year. The lay press found much of this newsworthy. Even the most conservative pharmaceutical houses began a bombardment of the medical profession with every degree of claim and persuasion. Avalanches of advertising (much of it by radio) by the manufacturers of all sorts of substances could scarcely help engendering a high degree of medical disgust and skepticism. Was it possible that all this splendid research should lead chiefly to illegitimate exploitation? As a result one may well show some hesitancy and trepidation in venturing any discussion in the field of vitamin therapy.

There have been many conservative clinical appraisals. Minot⁶ and others have recently summarized what is known or hoped for concerning vitamins and their exhibition under the general title "Nutritional Deficiencies." The title is significant. The field of generalities has been amply covered. There is presently a place for reports, limited in scope, regarding specific items. There are now available for clinical as well as laboratory research the crystalline (and therefore pure)

1. Christian, Henry A.: Some Limitations in Preventive Medicine, *Ann. Int. Med.* 12:1489 (March) 1939.

2. Christian's article deals explicitly with the medical problems which the older age levels present. Even though the net results in life prolongation may not total much actual extension, still it is the physician's job to apportion to individual patients the most reasonable interpretation of what progressive science has to offer elderly people in the way of sustained fitness and comfort. Yearly health examinations may help in this guidance more than it does in discovering disease at its earliest stages. A consideration of the major causes of death is sufficient to indicate the great numbers of elderly people who are liable to have pneumonia and frequently die from it. Surgical intervention continues to be the main hope of relief for most internal cancers. If these patients are to be operated on, every method of preoperative preparation, including dietary regimen, should be employed. At various stages during the course of chronic hyperlipis, diabetes and all the states exhibiting hemopoietic inadequacies, all need the vitalizing stimuli that follow when appetite induces zestful eating and when the liver and gastrointestinal tract function coordinately. The reader of Christian's forceful paper will find the detail and argument which space and the scope of my discussion limit.

3. Elvehjem, C. A.: Personal communication to the author.

4. Wobach, S. B.: Vitamin Deficiency Experimentation as a Research Method in Biology, *Science* 86:569 (Dec. 24) 1937.

5. Williams, R. R.: The Chemistry and Biological Significance of Thiamin, *Science* 87:559 (June 24) 1938.

6. Minot, G. R.: Nutritional Deficiencies, *Ann. Int. Med.* 12:427 (Oct.) 1938.

substances thiamin chloride (B_1), riboflavin (B_2) and nicotinic acid. These are pharmaceutical agents. The food sources of these substances are well known. The fields, the garden and the grocery store are still the correct source of routine supply. Persons with normal



Fig. 1.—The barium filled stomach of a 59 year old man with diabetes and tabes at first examination: atony, transverse position and dilatation. Extreme retention resulted.

appetites who get satisfaction from a wide variety of foods obtain through mother nature's liberality as much of these substances as they need. But all sorts of dire vicissitudes including hypertension, cancer, heart disease or Bright's disease have been erroneously attributed to overindulgence. Sane eating as an esthetic accomplishment and a physiologic requirement has not maintained the social dignity imparted to the art by the gifted Brillat Savarin. Many persons either do not or cannot eat. Acute and more or less temporary conditions arise in which the drugstore's pharmaceuticals are of the greatest aid in restoring balance.

Where, therefore, may one use these concentrates with advantage? The literature is gradually giving some of the answers. The Spanish War isolated a large segment of the population, whose meager rations promptly gave a chance to try out the pellagra preventive properties of nicotinic acid. The reports of Spies and others in this country are convincing. Sebrell and Butler,⁷ using a Goldberger and Tanner diet with a group of women, have recently demonstrated the capacity of synthetic crystalline riboflavin to cure and prevent certain lip lesions commonly seen in undernourished women. Thus even within a vitamin group there is distinctive functional specialization. Natural foods evidently assemble the proportions of these principles essential for maintaining normal metabolism. Undernourished, tired folk are not normal. Relatively slight exertion gives them cramps and aches. Any suggestion of rheumatism or arthritis, and they adopt a selective diet. Many such patients may well have minor grades of avitaminosis. However, the sign by which substantial selective vitamin therapy is indicated is best found in acute physiologic breaks in the presence of known disease. I maintain that by such selection we,

as therapists, may best establish our confidence in vitamin concentrates as pharmaceuticals. Castle⁸ has vividly stated that vitamins are to the body what oil is to the crank case; hard driving increases both the need and the consumption of oil. So suspect avitaminosis B where energy wastage has occurred (hyperthyroidism) or gross water loss as in diabetes, severe vomiting or diarrhea. This approach has given me the correct lead in the following instances, which I propose briefly to summarize:

A man aged 50 at the time of death had had successful surgical treatment for exophthalmic goiter eleven years previously. For three years he was known to have diabetes. Insulin was necessary for adequate control. He had a normal heart, both shortly after his goiter operation and later. For a month prior to death he had difficulty in managing his diet and insulin. His physician reported that diabetic coma developed after two weeks of nervousness, apprehension and weakness with some vomiting. The routine high fluid intake and large doses of insulin promptly restored him. His heart was still normal both by usual standards and by x-ray outlines. He was kept for a week on a stabilizing regimen and was discharged from the hospital. Five days later he was brought back in obvious collapse from congestive heart failure. Six days of diligent effort to restore cardiac competence failed. At autopsy both ventricles were widely dilated without evidence of previous hypertrophy. The muscle showed hydropic degeneration. The Wenkebach heart of beriberi, or that which Soma Weiss and others have described in death from chronic alcoholism, was found.

The tissue identification of this entity leaves much to be desired but it is the most logical present explanation. I resolved to keep this situation in mind and soon



Fig. 2.—Appearance after parenteral injections of thiamin chloride. The stomach shows normal position and tonus and emptied normally.

had an opportunity to profit therefrom. The following summary briefly catalogues the evidence and observations on an elderly man:

A man aged 59 had a 50 pound (23 Kg.) weight loss in two years, going down from 151 to 101 pounds (68 to 46 Kg.).

For months his appetite had been extremely poor. He had become a hypochondriac centered on his constipation. Violent catharsis had only exaggerated his distress.

7. Sebrell, W. H., and Butler, R. E.: Riboflavin Deficiency in Man, Pub. Health Rep. 53:2282 (Dec. 30) 1938.

8. Castle, W. B.: A Lecture to Graduate Students, Boston City Hospital, March 1938.

At 18 years of age he had had syphilis, receiving at the time very little treatment. Five years prior to my observation he had been reviewed at a venereal clinic and found to be tabetic. He received the usual diligent but stereotyped series of injections so popular with syphilologists but at times accorded rather dubious approval by internists. His *tabes* was well established.

Two years before his present illness, while he was undergoing antisyphilitic treatment, it was found (since he had nocturia and weight loss) that he had diabetes. An attempt had been made to direct his diet. However, he proclaimed that he had a dry, parched throat and that no one paid any attention to these complaints and to his inability to swallow. The dysphagia was gradually increasing. He described this situation well and asserted that after eating a few mouthfuls "the stuff didn't seem to go down" and that after he had finished eating there was a tendency for it to come back up into his throat. Assiduous search was made for an esophageal diverticulum. While the barium sulfate was said to pass down rather slowly, nothing else was found except that the stomach was uncommonly dilated with much retention and without evidence of pyloric obstruction. There was a moderate amount of sugar in the urine.

With the roentgenologist's supposition that there was some possible obstruction beyond the pylorus, the patient was hospitalized for close observation. Twenty-four hours after the first barium study he still had a large amount of barium sulfate in his stomach. The esophagus was reexamined and the appearance was as before. At a later study with a small amount of thick barium sulfate solution the gastric wall was described as showing "bizarre hyperplasia of the stomach folds or possible polypoid formation." Any attempt to lavage the stomach encountered the greatest difficulty. Siphonage was slow. It returned a conglomerate of mucus, a few food remains and sticky barium sulfate. There was no free hydrochloric acid present. (In retrospect, we did not appreciate the factor of vigorous gastric contractions in forcing stomach contents up through the tube. This man lacked such contractions.)

The patient was given 1 cc. of a solution of thiamin chloride (3,000 international units) parenterally, and this was repeated twice in the next twenty-four hours. Thereafter 1 cc. was administered daily. On the evening of the second day, when an attempt was made to lavage his stomach, surprisingly it was found to be empty. The accompanying illustrations are reproductions of roentgenograms of the stomach filled with barium sulfate suspension, before the giving of thiamin chloride and thereafter. Within two days a ravenous appetite had developed which it was difficult to appease. Two days later there was considerable diarrhea, which the patient himself considered a crowning triumph. Insulin was not given for a few days, and later on, as he began to eat more or less normally, it was found that his insulin needs were moderate.

He picked up rapidly and began to add some weight. His whole appearance changed from that of extreme emaciation, with evidence of dehydration, to an exuberance that was striking. His appetite lagged occasionally, and on these occasions, while he was on a substantial diet, the giving of thiamin chloride hypodermically seemed to have no appreciable effect. His vitamin B₁ requirements seemed to be provided by the diet he was assimilating.

COMMENT

Two other instances of severe diabetic coma have been successfully treated, in which thiamin chloride was given parenterally together with insulin and fluids. The impression gained was that less insulin was needed than usual, and far less fluid was administered than in the usual Joslin regimen. I have advised and tried thiamin chloride for a wide variety of conditions, especially for elderly persons, old prostatic patients in preparation for operations, patients with herpes zoster or sciatica and a few with hyperthyroidism; however, it is most difficult to adjudge the results when varied methods of therapy overlap. The limited specific

observations just presented are therefore detailed because of what they connote rather than because of novelty.

Biochemical considerations behind the physiologic action of thiamin chloride attest intricate relationships. That it occurs abundantly in yeast⁹ is no accident. It is essential wherever carbohydrates are broken down. In cooperation with tissue enzymes it expedites the breakdown of dextrose to the ultimate release of energy and the production of carbon dioxide. In its absence the breakdown is stopped at the level of a two ketone acid called pyruvic acid. For years the radio has been telling listeners that every one should take yeast. Inertia of the intestinal tract has been euphionously mentioned under various delicate disguises. One may use this particular item to ask some broader questions about purified vitamins in general and their use as pharmaceuticals. Physicians are trained to strive increasingly to make accurate diagnoses in terms of disease entities. Thus one feels a thrill of accomplishment when one "proves" that a person has "diabetes" or "tabes" or both, as my patient has. However, behind and beyond these and similar designations is the person whose body balance, or "homeostasis," as Cannon would say, is upset. Alvarez¹⁰ has often clarified these principles.

Surgeons are acquiring a productive technic in terms of water balance, upper intestinal obstruction, anorexia or blood volume. In this aspect it is not desirable to make less specific diagnoses, but they should be extended and augmented by efforts to ascertain the state of physiologic balance. Some people live carrying about a museum of diseases; others die with most of their organs intact. "Physiologic deaths" are not uncommon. I make no plea to adopt blindfoldedly all the compulsive advice of the parade of detail men that floods physicians with kaleidoscopic sequences of pharmaceutical combinations. Nevertheless, one should not insulate oneself against an attempt to use such products as are based on sound research and reasonable premises. The penalties of unwise application of researchers' discoveries may not be imposed on those who make them. The clinician is fortunately permitted much empiricism. It was thus that Withering established *digitalis*, and yet that famous drug is a "sovereign remedy" in a rather limited field of cardiovascular failure.

A huge volume of vitamin concentrates is sold to the public. Few physicians have failed to order the various combinations or isolated products. We have used them much as our predecessors used "bitter tonics." Reasonable honesty compels us to weigh the need of much of this treatment. On the other hand, my patient with extreme gastrointestinal atony—of esophagus, stomach and intestine—had a remarkable response to parenterally administered thiamin chloride. The claims of researchers that vitamin B₁ has such effect is supported. If avitaminosis B₁ can produce marked dilatation of the heart it appears also to have a similar effect on other hollow muscular viscera. The pharmacologic powers of these concentrates should be thus tried and tested when the indications exist. The field for such use of thiamin chloride may be inferred, and it may be given in substantial doses, especially when elderly

9. A recent number of the *Journal of the American Chemical Society* discusses the recent research of Prof. R. J. Williams (brother of R. P. Williams). He has established pantothenic acid as a universal vitamin. He isolated it from yeast. Jukes from California and Wooley, Wainman and Elvehjem of Wisconsin have confirmed his observations of growth promotion not only in the lower but in the higher forms as well, thus demonstrating the kinship of the whole organic world.

10. Alvarez, W. C.: *Advances in the Treatment of Indigestion*, *Wisconsin M. J.* 38:269 (April) 1939.

patients are pitted against severe physiologic impairment. This selective utilization promises to promote sanity in the field of vitamin therapy. The elderly should not be stuffed to overloading. If arteriosclerotic patients with or without angina pectoris are watched, it will be found that they tolerate four light meals better than two heavy ones. Their celiac and their coronary arterial sufficiency are subject to the same limitations in terms of energy demand. When heavy meals distress them they leave out many articles, supposedly because of qualitative distress. Muscular inadequacy of the gastric wall is a more likely explanation of the distress; it is comparable to the leg pains seen in claudication.

The purpose of this paper is fivefold:

1. To emphasize the growing importance of geriatrics.
2. To urge, without commending overindulgence, freer diets and less fear of food with older people.
3. To reaffirm the principle of getting the necessary protective elements (vitamins) from an ample diet.
4. To present evidence that thiamin chloride has a specific action, through its function in promoting carbohydrate metabolism, in restoring muscular adequacy to the gastrointestinal tract when prolonged deprivation has obtained.
5. To suggest that further limited and specific observations on the parenteral use of the various vitamin concentrates furnishes a better means of evaluation than the indiscriminate prescribing of heterogeneous combinations.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. MORRISON AND SWALM AND DR. TUOHY

DR. SEALE HARRIS, Birmingham, Ala.: The experimental work of Drs. Morrison and Swalm was well done and interesting but after having practiced gastroenterology and internal medicine for a good many years I haven't found any case of any organic heart disease or any death that I thought resulted from any vagal conditions or reflexes from the vagus. Dr. Tuohy's paper on geriatrics is important, and the experiment of geriatrics is coming and it should begin where the pediatrician leaves off. The trouble about it is that after men have spent a lifetime or fifty years with unhygienic habits and a wrong diet they expect doctors to renew them in every way. Feeding these old people every three hours day and night when they are awake, I think, has a good deal of importance. These old men and old women all have vitamin deficiency. The best place to get the vitamins is in food. The life insurance people know to their sorrow that the overweight man dies many years before his time comes. You don't see the overweight man living to be a hundred years old. The significant thing that is said is that on his ninety-ninth birthday he had a big party and wore the same clothes that he did when he was twenty-one. The man who goes through life light weight will live longer.

The Style of Life.—The mental attitude, or what Adler calls the style of life, is founded in the first five or six years of childhood. From this time onward the answers to the questions put by life are dictated by an almost automatic response based upon this style. The power motive will express itself quite differently in an only child, the eldest child, the second child or the youngest child. It is a profound mistake to think that children of the same parents living in the same home have the same environment any more than they have an identical germ plasm. The style of life then formed has later on to adapt itself to three great questions—Society, Occupation, Sex, which we may call the SOS of each individual. Only if he can make suitable adaptations to these three can he be happy and fit.—Langdon-Brown, Sir Walter: *Thus We Are Men*, New York, Longmans, Green & Co., 1939.

THE TUBERCULIN PATCH TEST AND THE MANTOUX INTRA-DERMAL TEST

A COMPARATIVE STUDY ON SEVEN HUNDRED SCHOOL CHILDREN

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AND

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The case finding program of the Cuyahoga County Health Department for tuberculosis control includes the routine tuberculin testing of the children in the first, seventh and tenth grades of the schools under the jurisdiction of the department. The method of testing employed prior to the year 1939 was the Mantoux intradermal test of the first and second strength purified protein derivative.

The Mantoux test, while very reliable, proved to have many disadvantages. This year the commissioner of health decided to substitute the tuberculin patch test as devised by Vollmer. We felt that an opportunity was presented to us to make a thorough comparison of the Mantoux and patch tests and to determine the reliability of the latter as compared to the Mantoux. So with the cooperation of the school boards and the Anti-Tuberculosis League of Cuyahoga County, who furnished the material, we prepared to do both the Mantoux and the patch test on as many children as possible; 712 were completed.

PROCEDURE

Patch tests used were those devised by Vollmer and manufactured by Lederle. Thin filter paper is saturated with tuberculin, dried and cut into squares 1 by 1 cm. and placed on adhesive tape 1 by 3 inches in size. Each strip of tape contains two tuberculin test squares placed on each side of a control square, the latter consisting of filter paper saturated with glycerin broth. Through the natural moisture of the skin (insensible perspiration) the tuberculin is dissolved and absorbed sufficiently to render a reliable cutaneous reaction.

The site of choice for the patch test was the skin area between the scapulae just to the right of the midline. This area was chosen in preference to the sternum or forearm for these reasons:

1. It is a convenient area for application and removal.
2. It is an inconvenient area for the patient to scratch or to remove the patch.
3. There are very little creasing and wrinkling of the skin.
4. There is minimum interference from body hair.

The skin was cleansed and defatted by the use of acetone with a moderate amount of rubbing. Then the patch was firmly applied. It was removed in forty-eight hours and read forty-eight hours after removal. Experience taught us that it was much better to read the test forty-eight hours after removal. If there was any nonspecific reaction due to irritation from the adhesive tape this would disappear in forty-eight hours, while the specific reaction to the tuberculin became intensified during the delay.

At the same time as the patch test was done a Mantoux test with first strength purified protein derivative was done on the left forearm. This test was read in forty-eight hours and if negative a second strength purified protein derivative Mantoux test was done.

To recapitulate for the sake of clarity, on Monday each child received the patch test and first strength Mantoux. On Wednesday the patch was removed and the Mantoux read and if the latter was negative the second strength Mantoux was done. The patch test and Mantoux were both read on Friday.

All the testing and reading of the tests were done by one physician of the staff so that any error which might arise in interpretation would be minimized.

INTERPRETATION

The criterion for calling the patch test positive was the presence of follicles or papules on an erythematous, indurated base under the area of the square of filter paper. The criteria for reading the Mantoux test as positive was an area of erythema with induration.

Before presenting the statistics on the comparison of the two tests, let us point out some of the difficulties of doing the Mantoux test on a large scale.

1. Number 1 on our list is hysteria. Surprisingly enough we had less trouble doing intradermal work on children in the first grade than on those in the upper classes. When the older children lined up for the Mantoux test, in a few minutes we often had a group of highly excited pupils. We had as much trouble with the boys as with the girls. Sooner or later syncope over-

Statistics

P. P. D. No. 1	P. P. No. 2	Patch
35 positive		35 positive
97 negative	97 positive	97 positive
21 negative	21 positive	21 negative
67 negative	67 negative	67 positive
492 negative	492 negative	492 negative

took some one and then as often as not we were treated to a fine spectacle of mass syncope. Even if this ordeal passed without serious injury, the school authorities and the Parent-Teachers Association were far from pleased.

2. The Mantoux test requires syringes, needles and sterilization. It requires the presence of a physician; if two dilutions are used, it requires his presence on three days. The purified protein derivative dilutions are made fresh daily and if the whole bottle is not used the rest is wasted.

3. The Mantoux test is traumatizing, which is a procedure to be shunned as often as possible in good pediatric practice. We are securing many more parental permissions for testing when we use the patch test exclusively.

4. The nurse can make patch tests of any contacts she may discover on a home call.

5. The Mantoux test often produced severe local reactions. Erythema and induration were occasionally followed by necrosis and sloughing. The Mantoux test has been known to cause severe constitutional reactions. The patch test has never been known to cause a constitutional reaction and but few unpleasant local reactions.

6. The patch test has proved to be less expensive than the Mantoux.

If the patch test can be shown to be as reliable and sensitive as the Mantoux, for the reasons enumerated it should be the method of choice for large scale tuberculin testing in school health work.

From the figures given in the accompanying table it can be seen that there was complete correlation

between the Mantoux and patch tests in 624 children tested, or in 87 plus per cent. This compares closely to the figure of 89 per cent obtained by Vollmer and Goldberger.

Sixty-seven cases, or 9 plus per cent, were positive to the patch test only, while only twenty-one cases, or 2 plus per cent, were positive to the Mantoux test.

The conclusions that can be drawn from these figures are that there is a high degree of correlation between the tuberculin patch test and the Mantoux and that the patch test is slightly more sensitive than the Mantoux.

COMMENT

All the testing and reading of these tests was done by one physician. Also the patch test was always read first without knowledge of the Mantoux. Just as in all tests, the very positive and very negative tests were easy to read. The in between reactions required a certain amount of skill, but on the whole it was the impression of the physician reading the tests that there was less doubt using the patch test than the Mantoux.

The true reading of the Mantoux test is frequently obscured by the fact that the needle trauma produces a certain amount of erythema at the site of injection. The presence of follicles under the patch were always diagnostic of a positive test. There was surprisingly little confusion from adhesive tape irritation, especially if the reading was delayed until forty-eight hours after the removal of the patch.

The twenty-one cases showing a positive Mantoux and negative patch test require some explanation. In two of these twenty-one cases the Mantoux was at least three plus and the patch unmistakably negative. We can offer no explanation for this except that perhaps the patches used were of faulty manufacture or that the children got the tests wet. The other nineteen cases were all one plus Mantoux or doubtful positives and in many of these the patch test was doubtful. The sixty-seven cases in which the patch test was positive and the Mantoux negative can be explained by the fact that the concentration of tuberculin on the patch is greater than that of the Mantoux which we used.

There were very few Negroes in the series, so no comment can be made on the use of the patch test on a colored skin.

SUMMARY

Seven hundred and twelve school children were given both the tuberculin patch test and the Mantoux test, first and second strength purified protein derivative.

Six hundred and sixteen had either both tests positive or both negative, the percentage correlation between the two tests in this series being 87 plus.

Sixty-seven had positive patch and negative Mantoux tests.

Twenty-one had positive Mantoux and negative patch tests.

CONCLUSIONS

The tuberculin patch test has a high degree of correlation with the Mantoux test and appears to give 7 per cent more positives than the Mantoux.

We can conclude that the tuberculin patch test is as reliable as the Mantoux. Its ease of application and nontraumatizing character make it superior to the Mantoux test in other ways.

We believe for these reasons that the tuberculin patch test is the method of choice in large scale tuberculin testing, especially for children.

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THE DIAGNOSIS AND TREATMENT OF
SLIPPED EPIPHYSESRALPH K. GHORMLEY, M.D.
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The importance of the treatment of slipping upper femoral epiphyses may be viewed in two ways: (1) the immediate result, that is, relief from pain and disability and correction of deformity, and (2) the ultimate result, which can be estimated only after the patient has reached the age of 50 or 60 years. There seems little doubt that many cases of morbus coxae senilis are based on changes resulting from a pre-existing slipped epiphysis. To select these cases accurately is often difficult, for the symptoms during adolescence may have been of such a mild nature that the patient may not have been conscious of the trouble or may have forgotten it.

In order to gain a true estimate of the value of modern methods of treatment we should be able to compare the end results in cases treated by these methods with the end results in those cases not treated. Obviously many years must elapse before this is possible. It is our opinion, however, that in spite of some apparently not too good immediate results from modern methods of treatment, on the whole the results in these cases from thirty to forty years hence will justify this treatment in most instances.

TERMINOLOGY

The term "slipped epiphysis" is in reality a misnomer. The epiphysis has not slipped; in fact, it retains approximately the same position in the acetabulum while the neck and the shaft of the femur rotate externally and ride upward so that the new relation of the epiphysis to the neck is downward and backward and the neck forward and upward from its normal position. Milch⁷ has pointed out that the nature of the lesion is more of an anteversion of the femoral neck and he therefore proposes the name "epiphyseal coxa anteverta," which perhaps more accurately defines the condition.

The term epiphysiolysis is apt and has obtained widespread recognition and usage, but we doubt whether any terminology will supersede the commoner expression "slipped epiphysis."

HISTORICAL

Separation of the epiphysis was first recognized in 1867 by Brousseau,⁸ who described a case of traumatic separation of the upper femoral epiphysis observed at necropsy on a boy who had been killed as the result of a crushing injury by a wagon wheel. However, the condition in which we are interested was first

described by Müller⁹ in 1888. Following this, several others published papers on the subject and, according to Brogden,¹⁰ Royal Whitman first described the true pathology of coxa vara in papers published in 1891 and 1893. The best summary to be found in the American literature is by Key,¹ who made an extensive review of the literature up to 1926, discussed the etiology and pathology as then known and reported the results of treatment in twenty-four cases. This article is an exhaustive review of our knowledge of the subject, carries an excellent bibliography and has served as a guide in most of the articles published since that time.

ETIOLOGY

Various hypotheses as to the causation of slipped epiphysis have been presented and most of these can be placed in one of three groups: (1) mechanical or traumatic, (2) infectious and (3) endocrine. Noble and Hauser¹¹ have shown that the weight curve reaches its greatest relative height during the period of adolescence and that therefore the greatest strain is put on the epiphysal line by weight alone during this period of life. Walmsley¹² has pointed out that extension of the hip beyond 15 degrees is prevented

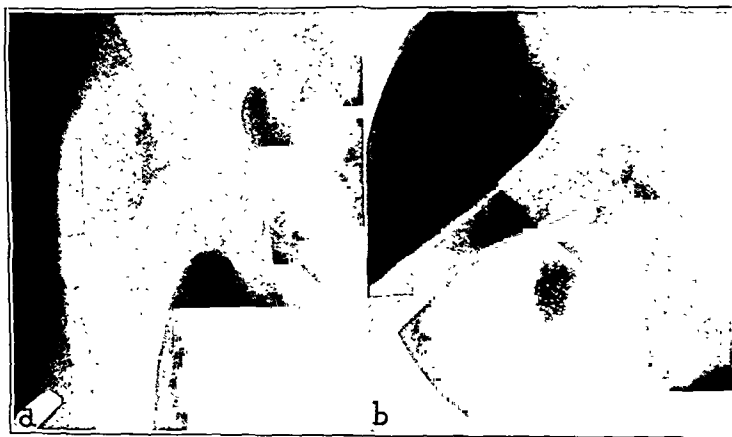


Fig. 1.—a, anteroposterior view; a boy aged 15 years; early slipping; b, lateral view, showing slight displacement. Patient, treated by conservative measures, had good result five years later.

by the capsule of the joint and locking of the femoral head in the acetabulum in this position. Extension beyond this point will produce motion at the expense of the epiphysal attachment. Both Badgley¹³ and Sever⁶ concluded that this mechanism is operative in the production of displacement of the upper femoral epiphysis. Milch⁷ expressed the opinion that an anteversion of the neck precedes the varus and it seems probable that the mechanism of extension could produce anteversion. Key,¹ Badgley,¹³ Kleinberg and Buchman⁴ and others have pointed out that the epiphysal plate between the head and neck changes its position from the horizontal to the oblique during the pre-adolescent and adolescent periods; there is also a thinning of the periosteum connecting the neck with the

From the Section on Orthopedic Surgery, the Mayo Clinic.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

Read before the Section on Orthopedic Surgery at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

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head during the adolescent period. We have observed cases with very nearly complete separation in which the periosteum was intact and, while it was thinned to some extent, it seems more likely that the thinning is secondary to the mechanical stretching than that it is a primary causative factor in the slipping.

Ferguson and Howorth¹⁴ expressed the opinion that sclerotic changes due to infection and resultant vascular stasis cause a weakening of the epiphyseal disk. Kleinberg and Buchman⁴ studied the epiphyseal plates removed from a number of patients and noted "a completely chaotic arrangement of normally functioning cells interspersed here and there with areas of necrosis and areas of hypervascularity."

Sutro¹⁵ reported pathologic studies on three specimens removed from patients suffering from slipped epiphysis. Sutro, and Ferguson and Howorth thought that fibrosis, calcification and premature ossification may be considered as secondary to the fracture of the epiphyseal plate. Balensweig¹⁶ postulated a low-grade infection resulting in osteochondritis of the epiphyseal line.

Symptoms of endocrine disturbances were invariably found in patients with slipped epiphyses by Gütig and Herzog.¹⁷ Brogden¹⁰ found that thirty-four of a total

these preexisting conditions, slight or moderately severe trauma may well set up the slipping process which leads to the condition.

DIAGNOSIS

Any adolescent presenting himself with a slight limp or painful hip should be regarded as possibly having a slipped epiphysis. One cannot overemphasize the importance of a very careful examination of the adolescent complaining of pain in the hip. Unfortunately the pain is often of such a mild degree as to be overlooked or to be disregarded by parents until an advanced stage of the condition has been reached. Diagnosis should be made in the very earliest stage of slipping or that stage called by some the "preslip" stage. One often finds but little on physical examination in this stage. Often a very slight limitation of internal rotation of the affected hip is all that can be detected and this only after the most careful comparison with the sound side. There may be no shortening, no atrophy and no persistent external rotation deformity, all of which signs are to be expected in the more advanced stage of the condition.

Carefully taken roentgenograms, again comparing the affected with the sound side, should be taken. Both anteroposterior and lateral views are important. Differences in the appearance of the position of the head are detectable by an apparent widening of the epiphyseal line in the anteroposterior view and an actual change in the position of the epiphysis in relation to the neck in the lateral view (fig. 1).

In more advanced cases the diagnosis is much easier. The affected extremity is shortened and is held in a position of partial external rotation, and marked limitation of external rotation is present. Tenderness about the hip varies with the stage of the condition.

METHODS OF TREATMENT

Reviewing the methods of treatment, one cannot help but be impressed with the general dissatisfaction noted in the results obtained by most authors. Among the methods advocated have been manipulation and cast (Whitman), traction on a Jones frame (Wardle¹⁸), prolonged fixation on a Jones frame (Taylor¹⁹), rest (Perkins²⁰), open reduction with or without internal fixation (Wilson,²¹ 1924), drilling of the head of the femur and epiphyseal line (Ferguson and Howorth¹⁴), impaction with the Cotton mallet (Jahss²²), Smith-Petersen nail (Wilson,²³ 1938), skeletal traction (Ellis²⁴), and plaster boots, manipulation and internal rotation (Adams²⁵). These are only a few of the methods advocated and in justice to the authors cited it should be noted that none of them advocate one method to the exclusion of all others. All agree that



Fig. 2.—a, a girl aged 12 years, duration of symptoms one month; b, same after manipulative reduction. Good result six years later.

of fifty-seven patients in his series had a growth abnormality or a definite endocrine imbalance; the remainder, however, were in many cases thin, tall adolescents with no evidence of disease or of disturbed growth. The unilateral type of slipped epiphysis is due to injury according to this author while the bilateral type is due to a constitutional predisposition. In Key's¹ summary of the literature he found that 15 per cent were bilateral.

The idea of trauma as the main if not the sole cause of slipping of the upper femoral epiphysis seems to us the most reasonable. At least this seems true of trauma associated with the mechanical disadvantage to which the epiphysis is subjected in its peculiar anatomic relationship to the neck of the femur. The fact that the slipping most often occurs at the age of adolescence may be due to either or both of two factors: (1) an increase in the inclination of the epiphyseal line at this age and (2) the obviously increased rapidity with which growth takes place at this time. With either of

14. Ferguson, A. B., and Howorth, M. B.: Slipping of the Upper Femoral Epiphysis: A Study of Seventy Cases, *J. A. M. A.* **97**: 1867-1872 (Dec. 19) 1931.

15. Sutro, C. J.: Slipping of the Capital Epiphysis of the Femur in Adolescence, *Arch. Surg.* **31**: 345-360 (Sept.) 1935.

16. Balensweig, I.: Femoral Osteochondritis of Adolescents and Sequelae: Epiphyseal Separation of the Hip, *Surg., Gynec. & Obst.* **42**: 604-614 (Nov.) 1926.

17. Gütig, C., and Herzog, A.: Die Epiphysenlösung im Schenkelhals bei Jugendlichen, *Beitr. z. klin. Chir.* **166**: 85-95, 1937.

18. Wardle, E. N.: Etiology and Treatment of Slipped Epiphysis of the Head of the Femur, *Brit. J. Surg.* **21**: 313-328 (Oct.) 1933.

19. Taylor, V. J. M.: Displacement of the Upper Femoral Epiphysis: Report on Twenty-Three Cases, *Brit. M. J.* **2**: 1003-1006 (Dec. 3) 1932.

20. Perkins, George: Treatment of Adolescent Coxa Vara, *Brit. M. J.* **1**: 55-56 (Jan. 9) 1932.

21. Wilson, P. D.: Displacement of Upper Epiphysis of Femur Treated by Open Reduction, *J. A. M. A.* **82**: 1749-1756 (Nov. 29) 1924.

22. Jahss, S. A.: Displacement of the Upper Epiphysis of the Femur (Adolescent Coxa Vara) Treated by Closed Reduction, *J. Bone & Joint Surg.* **29**: 856-866 (Oct.) 1931; Slipping of the Upper Femoral Epiphysis: Treatment in the Preslipping Stage, *J. Bone & Joint Surg.* **31**: 477-482 (April) 1933.

23. Wilson, P. D.: The Treatment of Slipping of the Upper Femoral Epiphysis with Minimal Displacement, *J. Bone & Joint Surg.* **36**: 379-399 (April) 1938.

24. Ellis, V. H.: Adolescent Coxa Vara, *Lancet* **1**: 1440-1442 (June 23) 1935.

25. Adams, J. D.: Mechanics and Reduction of Displaced Upper Femoral Epiphysis, *New England J. Med.* **210**: 178-180 (Jan. 25) 1934.

various stages must be treated differently. In general, our observations lead us to believe that the appropriate treatment of the various stages may be summarized as follows:

Stage 1. Early slipping stage. Treat by conservative measures, discontinue weight bearing by the use of crutches, with or without a walking caliper splint and a high sole on the shoe of the sound leg. Such cases must be observed over a period of many months in order to be sure that union between the head and neck of the femur has taken place, thus preventing further slipping.

Stage 2. (a) Stage of gradual slipping. During this stage the epiphysis is not completely separated and cannot be reduced by manipulation without danger of damaging the epiphysis, the epiphysial line and the circulation in the ligamentum teres, if any. Open operation with osteotomy is the treatment of choice.

(b) Acute slipping superimposed on a gradual slipping or a preslipping stage. Here the head of the femur is usually loose and can be reduced by gentle manipulation if treatment is not delayed too long after the complete separation has taken place. It is difficult sometimes to determine whether or not the head is loose and if one cannot be sure of this fact it is better to do an open reduction, replacing the head, than risk damaging the head by rough manipulations which may produce an unsatisfactory result.

Stage 3. The stage of complete slipping of long standing. In this stage open reduction and, if possible, replacement of the head of the femur is the treatment of choice. This will be possible when the epiphysis is still loose; but, in most cases in which the epiphysial line is closed, osteotomy through the neck to correct the external rotation and shortening of the leg is indicated. Adults are best treated by some form of arthrodesis if pain is a prominent symptom or by acetabuloplasty if motion is to be preserved.

REVIEW OF THE CASES SEEN AT THE MAYO CLINIC

During the fifteen year period from Jan. 1, 1922, to Dec. 31, 1936, inclusive, there were fifty-five patients seen at the Mayo Clinic for various stages of slipping of the upper femoral epiphysis. A history of a distinct severe injury to the hip was elicited in twenty-six cases, while in twenty-one there was a gradual onset of symptoms, more often than not associated with minor traumas. In the remaining eight cases an injury occurred to the hip at a variable time after the onset of symptoms. In these cases there was said to be a "latent injury." There were twenty-nine patients in whom the left hip was involved alone and twenty in whom the right hip was involved alone; six cases of bilateral hip involvement were found and these are reported in a later section.

The age distribution is given in table 1, the girls, in general, being in the earlier age groups, a statistical fact in accord with the observations of other writers.

A statement was made in the history in twenty-six cases that the patient was obese or was unusually large for his age. A diagnosis of constitutional obesity was made in fourteen of these twenty-six cases and a consultant in the Section on Orthopedic Surgery or a consultant in general medicine or neurology made a diagnosis of Fröhlich's syndrome in twelve cases. There was no note as to either the height or the weight in eleven histories and no note as to the height in four more. Of the forty-four patients of whose histories the weight was noted table 2 gives an estimate graded 1 to 4 of overweight and also the number considered to be of normal weight for their age and height.

These figures are noteworthy principally because of the number of patients whose weight was considered normal or only slightly overweight. The statement is frequently made that the typical candidate for a slipped upper femoral epiphysis is the fat boy with infantile genitalia and feminine distribution of fat and hair. It is well to point out that, while a considerable percentage of these patients are overweight, 61 per cent of this series in which figures for the weight are



Fig. 3.—a, a girl aged 14 years; symptoms for one year before operation; b, three months after osteotomy; c, six months after operation; good result after one year of observation.

given at the time they were first seen at the clinic for a slipped femoral epiphysis were of normal weight or were only slightly above normal weight.

Determinations of the basal metabolic rate were made of four of the twelve patients considered to have

TABLE 1.—Age Distribution of Patients Suffering from Slipping of the Upper Femoral Epiphysis

Age, Yrs.	Males	Females	Total
9.....	1	0	1
11.....	0	3	3
12.....	4	4	8
13.....	5	1	6
14.....	8	1	9
15.....	9	0	9
16.....	5	1	6
17.....	3	0	3
18 and over.....	8	2	10
Totals.....	43	12	55

Fröhlich's syndrome. The rate was normal for three and a reading of — 23 was recorded for one. Roentgenograms of the skull were made in four instances with a negative sella turcica in three and definite evidence of an intrasellar lesion with erosion of the floor of the

sella in one. This patient had a definite pituitary insufficiency but had normal visual fields and ocular fundi and exploration of the pituitary fossa was not advised at the time he was seen at the clinic. Calcium, phosphorus and phosphatase determinations were made on the blood of three of these patients and all values were within normal limits.

There were twelve patients whose roentgenograms revealed a stage 1 condition, namely an early or "pre-slipping stage," with symptoms present for from three months to two years. Thirty-four cases belong to stages 2a and 2b and stage 3. Slipping has taken place in moderate or marked degree and the symptoms have been present for a variable time from one month to five years.

OLDER CASES

Nine patients were adults with hips which were troublesome on the basis of an old slipping of the upper femoral epiphysis. Conservative treatment was recom-

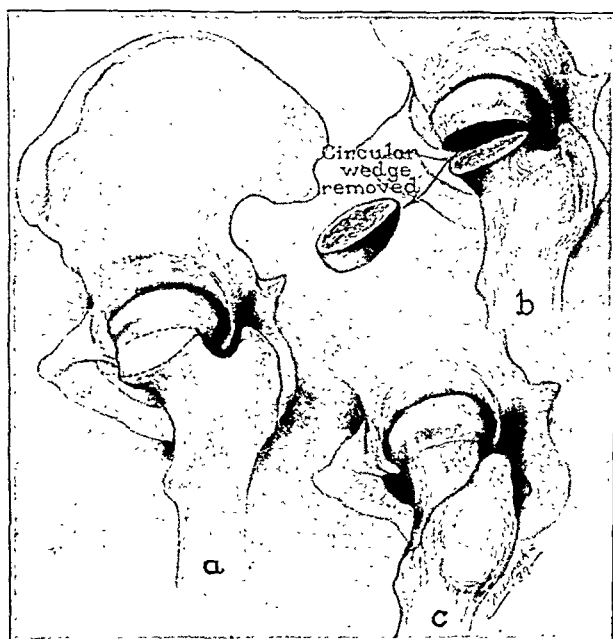


Fig. 4.—a, position of epiphysis and neck; the periosteum not broken; dotted lines indicate line of osteotomy; b, showing wedge removed; c, osteotomy closed.

mended in all the latter. The roentgenograms of these hips show varying degrees of osteo-arthritis about the joint margins with adjacent sclerosis of the acetabulum and the head of the femur. Clinically these patients showed up to $1\frac{1}{2}$ inches of shortening, limitation of rotation and flexion and limited abduction and some permanent outward rotation of the foot. These hips are intermittently painful and disabling, often to the extent of preventing the patient from earning a livelihood in an active occupation. The prevention of these disabilities, the result of an old slipping of the upper femoral epiphysis, seems sufficient reason for active treatment of almost all the slipped epiphyses seen in adolescence by orthopedic surgeons.

Arthroplasty, arthrodesis and acetabuloplasty are available procedures for some of these patients, but their hips are sometimes useful enough for the demands of a sedentary occupation and they carry on with palliative measures or without treatment, putting up with an increasing disability.

OTHER CASES

We have classified our patients for purposes of study of the end results of treatment into two large groups: those treated by operative measures alone and those treated by conservative measures alone. The operative group includes patients treated in casts alone, those treated by manipulation and those for whom arthroplasty of some sort was the treatment of choice. There were a number of patients for whom for one reason or another no specific recommendation as to treatment was made. This group includes many of the adults with disability due to an old slipping of the upper femoral epiphysis; others were adolescents whose parents refused intervention of any kind and another patient, an imbecile, was denied treatment because of his mental condition.

CAST ALONE

There were three patients who were treated by the application of a cast alone, usually for a four to six months period, followed by crutches or braces until union of the epiphysis had taken place. A good result was obtained for one patient and a fair result for one; the condition of another patient remained unchanged as the result of treatment. The latter was a boy of 15 years with disability from his left hip for four years following an injury. The roentgenogram in this instance showed an old slipped epiphysis but operative intervention was not advised.

MANIPULATION

There were eight patients on whom manipulation was carried out with good results for six, a fair result for one and a poor result for one (table 3).

By some observers manipulation has been found of doubtful value in the treatment of slipping of the upper femoral epiphysis, while others have found this method of treatment useful in cases in which slipping has been recent. Balensweig¹⁶ noted six poor results in eight cases in which manipulation was done, while Brogden¹⁷ obtained twenty out of thirty satisfactory results by the Whitman manipulation of patients with symptoms of less than four months' standing. According to Bentzon,²⁶ reposition of the head should be attempted by manipulation in all cases seen under six months and in his opinion the manipulation could not be blamed for the complications occurring later on. MacAusland²⁷ found that the Whitman manipulation gave favorable results in a higher percentage of cases than is generally reported in the literature. Pomeranz and Sloane²⁸ and many others have emphasized that surgeons frequently misinterpret replacement of the femoral head following a manipulation when actually no change in the position of the head has taken place.

Of the six cases in this short series in which complete slipping had taken place, the duration of symptoms had been very short with one exception, in which the duration was one year. Two instances of early slipping or pre-slipping as interpreted from the roentgenogram, with a duration of four and of nine months, had a good and a fair result. The poor result occurred for a youth aged 17 years whose symptoms had been present two months with complete slipping of the epiphysis. In this series results by manipulative treat-

26. Bentzon, P. A. K.: Should Reposition of Epiphyses Be Made? *Acta orthop. Scandinav.* 2: 331-339, 1932.
27. MacAusland, A. R.: Separation of the Capital Femoral Epiphysis. *J. Bone & Joint Surg.* 33: 353-369 (April) 1935.
28. Pomeranz, M. M., and Sloane, Marian F.: Slipping of the Proximal Femoral Epiphysis: Therapeutic Results in One Hundred and One Cases. *Arch. Surg.* 30: 697-624 (April) 1935.

ment were good in 75 per cent of eight cases. We must emphasize, however, that in only the most carefully selected cases should manipulation be tried (fig. 2). Damage to the epiphysis, the ligamentum teres and the acetabulum may result from undue stress in manipulation.

OPEN REDUCTION

There were six cases in which open reduction was performed with good results in two, a fair result in two, a poor result in one and an unknown result in one (table 4). Open reduction without internal fixation was performed in four instances. A bone screw was used for internal fixation in another with complete failure, this patient having come to an arthrodesis of the hip within the past year.

An unsuccessful manipulation had been performed on one of these patients prior to the open reduction. A clot-filled joint cavity was found at arthrotomy four days after the manipulation. The two fair results and the one complete failure occurred in cases in which symptoms were present for three months or less. Ordinarily the best results from open reduction are obtained in those cases when reduction is done early in the course of the disease and the femoral head is easily moved by an instrument as described by Wilson²¹ (1924). Cases of recent slipping which cannot be reduced by easy manipulation may be treated by this method.

The poor results in this group of cases probably mean that manipulation of the epiphysis at the time of operation was too violent and damage was produced which later resulted in changes such as aseptic necrosis of the femoral head. However, when gentle manipulation

TABLE 2.—Weight Distribution of Patients Suffering from Slipping of the Upper Femoral Epiphysis

Normal weight.....	15
Grade 1, overweight.....	9
Grade 2, overweight.....	8
Grade 3, overweight.....	6
Grade 4, overweight.....	3
Total.....	44

TABLE 3.—Patients Suffering from Slipping of the Upper Femoral Epiphysis Who Were Treated by Manipulation

Age	Roentgenogram	Duration	Treatment	Observed	End Result
11	Slipped	2 months	Manipulation	14 years	Good
15	Slipped	1 month	Manipulation	3 years	Good
11	Slipped	4 months	Manipulation	14 years	Good
17	Slipped	2 months	Manipulation	14 years	Poor
12	Early slipping	4 months	Manipulation	14 years	Good
14	Early slipping	6 months	Manipulation	8 years	Fair
12	Slipped	1 month	Manipulation	6 years	Good
12	Slipped	1 year	Manipulated and wired	2 years	Good

fails in this type of case we feel that we must resort to open operation and attempt by the gentlest sort of instrumentation to reduce the displacement. When the separation of the head is not complete and the epiphysis is not free we feel that osteotomy should be done as indicated in the next section.

OSTEOTOMY OF THE FEMORAL NECK

There were eleven osteotomies of the neck of the femur done for slipped upper femoral epiphysis in this series and these constitute the largest single group of any one form of therapy (table 5). Seven of these

hips were treated without internal fixation while beef bone screws were used in three and Kirschner wires were used for fixation of the head in one case. In none of these cases had manipulation been performed prior to arthrotomy. Six patients in this group were considered to have good results (fig. 3). Three patients were considered to have fair results; one of these, who

TABLE 4.—Patients Suffering from Slipping of the Upper Femoral Epiphysis Who Were Treated by Open Reduction

Age, Years	Roentgenogram	Duration	Treatment	Observed	End Result
15	Slipped	2 months	Open reduction	3 years	Fair
14	Slipped	3 months	Open reduction	12 years	Fair
14	Slipped	18 months	Open reduction	8 years	Good
16	(bilateral) Slipped	6 months	Manipulation and open reduction	4 months	Unknown; good anatomic result
13	Slipped	3 months	Open reduction, b. b. screw	4 years	Poor (later came to arthrodesis)
15	Slipped	3 months	Open reduction	1 year	Good

TABLE 5.—Patients Suffering from Slipping of the Upper Femoral Epiphysis Who Were Treated by Osteotomy of the Femoral Neck

Age, Years	Roentgenogram	Duration	Treatment	Observed	End Result
15	Slipped	5 months	Osteotomy, 2 beef bone screws	11 years	Fair
14	Slipped	18 months	Osteotomy, 1 beef bone screw	11 years	Good
15	Slipped	7 months	Osteotomy	11 years	Fair
14	Slipped	3 months	Osteotomy	1 year	Fair
16	Slipped	8 months	Osteotomy	9 years	Good
15	Slipped	8 months	Osteotomy	9 years	Good
11	Slipped	5 months	Osteotomy	1 year	Poor
17	Slipped	3 years	Osteotomy, 1 beef bone screw	2 years	Good
19	Slipped	2 years	Osteotomy, Kirschner wires	6 months	Too early to say
14	Slipped	2 years	Osteotomy	2 years	Good
14	Slipped	1 year	Osteotomy	1 year	Good

was under observation in 1931-1932 and was then lost track of, had a good anatomic reposition and was progressing well clinically. One case has not been traced and the end result cannot be stated. One patient treated by osteotomy had a poor result anatomically and functionally. This case could not be checked up after a lapse of seven years following operation. We have reports only within one year of the osteotomy on which to base conclusions (fig. 4).

From table 5 we see that 60 per cent of those cases in which the end result is known show good results while 30 per cent show fair results and there is one poor result. Even then figures do not quite reach the percentages of good results found in the group treated by manipulation.

COMMENT ON OPERATIVE PROCEDURES

Opinions concerning the treatment of the preslipping or early slipping stage of slipped epiphysis are fairly uniform: namely, prevention of weight bearing, rest and observation of the progress of the lesion in the epiphysal line until union of the epiphysis with the neck has taken place. However, in 1931 Jahss²² suggested the advisability of converting even all early stages of slipped epiphysis into acute separations and then reducing these acute displacements. If reduction did not occur as expected, open reduction was to be

performed. In 1933 Jahss²² advocated impaction with the Cotton mallet in early cases. Recently Wilson²⁹ has recommended the hastening of union of the epiphysis and protection from further slipping by the use of a Smith-Petersen nail introduced in the early or pre-slipping stage. In the cases with completely separated epiphyses, early manipulation seems to be the treatment of choice.

The type of operative procedure recommended for chronic slipping is variable, depending on whose results one is reviewing, and some authors condemn operative procedures altogether. Wardle¹⁸ was very positive in his condemnation of open operation and favored a long period of steady and increasing traction in preference to any operative method. Perkins²⁰ likewise condemned osteotomy through the femoral neck but favored subtrochanteric osteotomy for the chronic slipping. Ferguson and Howorth¹⁴ reported subtrochanteric osteotomy in four cases, in two of which partial improvement was effected and two came to subsequent reconstruction. In the experience of Brogden¹⁰ open operation gave better results in cases in which symptoms had been present for four months or more. He favored resection of the epiphysal plate, as did Kleinberg and Buchman.⁴ The importance of maintaining the inferior periosteum of the neck and head of the femur was emphasized by Badgley and several of the others who advocated osteotomy through the neck of the femur.

Willis³⁰ concluded that, no matter how treated, the lesion causes a premature fusion of the epiphysis and consequent effect on growth. There is deformity of the femoral head and acetabulum inversely proportionate to the efficiency of treatment. In reviewing the literature, Pomeranz and Sloane²⁸ found about 50 per cent good results regardless of what was done and they regarded this figure as optimistic. Singularly enough, this is about the percentage of good results seen following the older and more conservative management of fracture of the neck of the femur.

Of these twenty-six cases in which operative procedures were carried out with known results, a total of fifteen, or 58 per cent, had good results as far as we could determine from follow-up observations and inquiry by letter. Fair results were noted for seven patients and poor* results for three. One patient treated in a cast had experienced no change in symptoms. For two patients the results are not known. Many of the fair and poor results had good anatomic reposition but the patients failed to obtain good function and a completely useful hip. Whether or not morbus coxae senilis will develop in these cases later in life remains to be seen.

CONSERVATIVE TREATMENT

Conservative treatment included splints, braces, crutches, a high soled shoe on the sound foot, weight reduction, removal of foci of infection and physical therapeutic measures. There were four adolescents with completely slipped epiphyses and the end results were good for two, poor for one and fair for one. It is evident that the conservative treatment of a completely slipped epiphysis is occasionally productive of as good results as the operative treatment. This had been pointed out by Friedrich³¹ for a series of patients

observed in early adolescence who had not had the benefit of the modern therapy for slipped epiphysis owing to the economic status of the patients. The particular form of conservative treatment advised in any specific instance of a completely slipped epiphysis obviously depends on the individual patient, the length of his disability and the roentgenographic appearances. The object of conservative treatment is chiefly protection from weight bearing during the period of fusion of the epiphysis with the neck, in whatever position this may occur, and the prevention of further slipping, which usually involves the same type of therapy. In nine cases no treatment was given here, in most instances parents and patient refusing to follow advice.

TREATMENT OF THE EARLY SLIPPING OR "PRESLIPPING" STAGE

Table 6 summarizes the data in twelve cases in the early slipping or "preslipping" stage of the disease. The stage of the disease has been judged in each instance on the roentgenographic observations. In eight cases, or 73 per cent of the cases with known results, the outcome was good, although it must be borne in mind that one case has been observed for only

TABLE 6.—Patients in the Early Slipping or "Preslipping" Stage

Age	Duration	Treatment	Observed	End Result
12	Unknown	Cast.....	7 years	Fair
12	4 months	Manipulated.....	14 years	Good
12	6 months	Cast.....	13 years	Good
15	3 months	Brace, crutches.....	5 years	Good
13	3 months	Weight reduction.....	4 years	Good
16	2 years	Shoe corrections, crutches.	9 years	Poor
14	9 months	Manipulation.....	8 years	Fair
9	10 months	Shoe corrections, crutches.	3 years	Good
13	6 months	Brace, crutches.....	3 years	Good
12	5 months	Weight reduction, crutches	2 years	Good
16	4 months	None.....	Once	Unknown
12	3 months	Shoe corrections, crutches.	1 year	Good

a year. In two cases the results were fair. In one case the result was poor; the condition progressed to complete slipping after the patient had left the clinic and it was treated in an orthopedic hospital by open reduction. In one case the result was unknown.

BILATERAL EPIPHYSIAL SEPARATION

At the time of examination at the clinic there were six of this series of fifty-five patients who had bilateral hip changes. At the first visit usually and always at some time during their course these patients had roentgenograms of both hips. The importance of roentgenographic examination of both hips has been pointed out repeatedly and, if for no other reason than that of comparison, it is desirable to make films of the affected and the supposedly normal hip, as occasionally one may find that during the course of treatment for a slipping femoral epiphysis in one hip the opposite hip may commence to slip. Obviously cases in which both hips are involved are much more difficult to treat. If the slipping occurs simultaneously any sort of conservative treatment would demand complete recumbency. It seems to us that, in these cases particularly, Wilson's recommendation to perform early nailing is indicated.

SUMMARY

From our study of this group of cases we feel that we must recognize the condition of slipped epiphysis as a potential source of serious deformity and disability

29. Wilson, P. D.: Conclusions Regarding the Treatment of Slipping of the Upper Femoral Epiphysis. *S. Clin. North America* 16:733-752 (June) 1936.
30. Willis, T. A.: The Slipping Femoral Epiphysis. *J. Bone & Joint Surg.* 27:779-787 (Oct.) 1929.
31. Friedrich, H.: Coxa Vara Epiphysarea. Verlauf, Behandlung, Endausgange. *Acta. Arch. f. Klin. Chir.* 168:132-162, 1931.

in adult life if not treated adequately in adolescence. The results, while not perfect in many cases, will probably lead to less serious disability in adult life.

Another lesson to be learned is that early diagnosis is most important, for many cases can be protected against further slipping by conservative measures and a fairly normal hip be preserved.

In any operative treatment the vulnerability of the epiphysis to injury is the most important thing to remember. Closed reductions can only be done early and should be done by the gentlest possible manipulation. In any open operation the same care of the epiphysis must be observed and when the epiphysis is not free we believe that a cuneiform osteotomy can be done with the least damage to the epiphysis itself.

ABSTRACT OF DISCUSSION

DR. BECKETT HOWORTH, New York: The argument as to whether or not there is a preslipping stage is of some importance from the standpoint of etiology, because there is definite evidence that there is a period of softening on the neck side of the epiphysal plate before the slipping actually begins. The period before any slipping occurs may be very short. The disease is present not only at the junction of the capital epiphysis with the femoral neck but also in the periosteum, the synovial membrane and even the capsule. The exciting cause of the condition is yet to be discovered. The most important features in the early stage are limp and slight pain on activity, with spasm, limitation and pain at the extremes of motion. Often a very careful examination is required for recognition of these signs. The handling of the preslipping stage is the heart of the problem, for the diagnosis should be made in this stage. These patients primarily have synovitis of the hip and should be treated so as not to alter the blood supply to the neck and head. Therefore rest is of prime importance, but immobilization is undesirable, as it leads to limitation of motion. One can hasten the union of the epiphysis to the neck by drilling them and inserting small bone pegs. Thus one can get these children up sooner and reduce the cost of their care without sacrificing motion. When the epiphysis has really slipped, the chances of securing a good result are not good regardless of the method of treatment. I agree with Dr. Ghormley that manipulation has a limited value and use it only in those cases in which there is a recent slip with no callus in the angle between the head and the neck inferiorly. The displacement can usually be corrected only by open reduction. Any type of reduction is poor treatment because the head must be entirely separated from the neck in order to obtain reduction. I have seen some fifty or sixty of these hips at open operation, and in all cases but one there has been some union between the head and neck. When the head is completely separated from the neck, most of the blood supply of the head is immediately destroyed, with the risk of circulatory changes which will severely damage the head. Thus one may secure a perfect anatomic reduction with a poor physiologic result. The aim should be to avoid the necessity for an open operation, but if one must do such an operation, whether it is osteotomy, open reduction, pinning, pegging, or anything else, the primary aim in the postoperative care should be early active motion. For it has been found that immobilization in plaster after any type of operation results in limitation of motion. Many patients who have had no treatment get along as well as some of those with a good anatomic result.

DR. WALTER P. BLOUNT, Milwaukee: I approve of the authors' thesis heartily. In 1930 I described a peg leg cast which I had seen in Europe. Since that time I have used it as a specific for treatment of the "preslipped" condition or the condition in which slipping is minimal. It accomplishes two definite things: It holds the hip in abduction and inward rotation and so prevents further slipping, and it allows the child to be ambulatory. Since that time I have used a similar type of brace as a follow-up for the cast in a few cases. The combination of a peg leg cast and a brace has given me a method of treating the "preslipped" condition which has been wholly satisfactory. In the freshly

slipped epiphysis, open reduction with osteotomy of the neck as described by the authors is an ideal solution and I have used it with Austin Moore's nails for internal fixation with very good results. The second point, which was not mentioned at all, is the use of the trochanteric osteotomy in the old case, the one in which, as both speakers have pointed out, there is some bony union between the slipped head and the neck. The principle of protecting such a hip in its slipped position until there is solid union, and then doing a trochanteric osteotomy to realine the femoral neck, was advocated by Waldenström and Camitz ten years ago. In the early higher osteotomy there is greater danger of causing further damage to the head with increased likelihood of late changes with pain and stiffness.

DR. W. B. CARRELL, Dallas, Texas: I should like to emphasize careful handling of the epiphysis; in a slide I shall show an open operation done very gently, the head being replaced, and yet the result was extensive damage. I think that, as Dr. Brown has said, it is better when the slipping is not too great to allow it to remain in deformity, make the correction below, and then, if necessary, later carry out additional reconstructive measures in the joint.

DR. E. M. REGEN, Nashville, Tenn.: Last fall at the meeting of the Clinical Orthopedic Society in Nashville, Tenn., and Birmingham, Ala., I reported three cases of slipping of the upper femoral epiphysis. The condition in two of them was easily reduced by gentle manipulation. One required open operation for reduction. All corrections were fixed with Smith-Petersen nails. These hips remained normal as regards function and x-ray examination for from six to eight months. Further observation over a period of two years indicates complete failure of the method, and I am sure that these hips will ultimately appear exactly like those Dr. Carrell has shown here. The condition of the head of the femur and the hip joint in each case appears to be growing worse.

DR. RALPH K. GHORMLEY, Rochester, Minn.: I read Dr. Howorth's and Dr. Ferguson's article and tried to appreciate the importance of infection, which they stress, and the importance of the pathology of preslip. I have not seen it. It may be there, but at the time they are seen there has been enough slipping to call it a slipped stage. How one is going to diagnose that preslipped stage unless one sees the children at their very first complaint I do not know. The pathologic changes found in the synovial cap may be secondary rather than primary. I appreciate the fact that Balensweig's sign and the other sign of palpating the head were mentioned. We did not go into the details of the examination of an extensive slip because we are sure all are familiar with it. Whether one can speed the union of the epiphysis in the preslip or early stage by drilling we think is a matter for argument. Some feel that once slipping is established there is a tear through that epiphysal line; there is enough damage to it to promote its early closure, and certainly in our experience in some of these cases that is true. It does not take more than a slight amount of slip to rupture the cartilage cells to the point where they will begin to assume early ossification, and the closure will take place rather rapidly. I agree with the idea of not operating for a slight slipping. We have a case now with slipping on one side, treated by pinning elsewhere with a resulting stiff hip which has good function. In the past week the left hip began to bother the patient and he has a little slipping. It seems best to attempt conservative treatment to save that hip for what it is good for now, and I think it will turn out to be a fairly good hip. Dr. Blount's suggestions regarding the peg leg cast for preslip and trochanteric osteotomy I am not prepared to discuss. I appreciate that many have obtained good results with trochanteric osteotomy. Dr. Carrell's case illustrates further the same type of case we had with open reduction in which too much trauma probably takes place through the head of the femur. I was glad to hear Dr. Regen's report, because Dr. Wilson and Dr. Badgley have taught me that they are quite enthusiastic about it. I think that there is room for argument about the results in those cases. When one is absolutely qualified and able to put that nail in with no damage to the head, it is probably best to use it, but certainly if everybody used it there probably would be more poor results than good results.

THE DURATION OF LIFE AFTER CEREBROVASCULAR ACCIDENTS

A STUDY OF 296 CASES IN WHICH AUTOPSIES WERE MADE

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NEW ORLEANS

It is a common fallacy among members of the medical profession, as well as among the public, to assume that cerebrovascular accidents are responsible for a great number of so-called sudden deaths, in which the term "sudden death" is taken to mean death which occurs within two hours after the onset of symptoms. This assumption has persisted in face of the fact that no case has been reported in the literature in which death occurred within less than five minutes of the onset of symptoms.¹ Spillsbury² felt that such deaths were rarely sufficiently rapid to warrant cerebrovascular accidents being called a cause of sudden death. While coroner for Dublin, Maloney³ reported a large series of sudden deaths and in only one case did the question of cerebral hemorrhage arise; in this instance the man was found dead. In the series to be reported, persons who were found dead were examined post mortem by the coroner's staff and the results were not available. However, at Charity Hospital among 10,903 consecutive autopsies, there was only one death from apoplexy in less than one hour after the onset of symptoms. This was in accordance with the observations made by Thomas⁴ in 1915 and by Aring and Merritt⁵ in 1935; these authors felt that death within two hours after cerebral hemorrhage was rare.

TABLE 1.—Survival Period After Cerebrovascular Accidents

Survival Period	Cases of Hemorrhage	Cases of Thrombosis	Cases of Embolism	Total Cases
0-2 hours	Actual..... 8 Expected..... (4.07) x2/m..... (3.79)	1 (4.34) (2.34)	0 (0.38)	9 (3.0%)
2-24 hours	Actual..... 38 Expected..... (24.89) x2/m..... (7.78)	16 (26.57) (4.20)	1 (3.33) (1.81)	55 (18.8%)
1-5 days	Actual..... 40 Expected..... (37.32) x2/m..... (0.22)	37 (39.61) (0.17)	5 (3.26) (0.01)	82 (27.7%)
6-15 days	Actual..... 38 Expected..... (38.02) x2/m..... (0.00)	36 (40.38) (0.31)	10 (5.39) (3.11)	84 (28.3%)
16-30 days	Actual..... 6 Expected..... (7.24) x2/m..... (0.21)	9 (7.72) (0.21)	1 (0.68) (0.15)	16 (5.5%)
1-6 months	Actual..... 3 Expected..... (12.67) x2/m..... (7.38)	22 (13.32) (6.64)	2 (1.79) (0.02)	28 (9.4%)
7-12 months	Actual..... 0 Expected..... (1.81) x2/m..... (1.81)	4 (1.97) (2.21)	0 (0.23) (0.23)	4 (1.4%)
1 or more years	Actual..... 1 Expected..... (8.14) x2/m..... (6.26)	17 (5.69) (7.94)	0 (1.15) (1.15)	18 (6.1%)
Total.....	134	143	19	296

A review of all cases of cerebrovascular accidents in which autopsy studies were made at the Charity Hospital between 1929 and 1938 produced a total of 296 cases

1. Abercrombie, quoted by Thomas.⁴

2. Spillsbury, B. H.: Sudden Death, Practitioner 98: 132-133 (Feb.) 1917.

3. Maloney, M. J.: Sudden Death, Dublin J. M. Sc., February 1921, pp. 60-69.

4. Thomas, H. M., in Osler, William, and McCrae, Thomas: Modern Medicine: The Theory and Practice, Philadelphia, Lea & Febiger 7: 399, 1915.

5. Aring, C. D., and Merritt, H. H.: Differential Diagnosis Between Cerebral Hemorrhage and Cerebral Thrombosis: A Clinical and Pathologic Study of 245 Cases, Arch. Int. Med. 56: 435-561 (Sept.) 1935.

which were found to be satisfactory for this study. Hemorrhages and infarctions resulting from trauma at birth or later, and those accompanying specific diseases of the nervous system such as neoplasms, were not utilized. When repeated "apoplexies" occurred, the duration of life after the first accident was the time used.

As previously stated, in this group only one patient died in less than one hour after the onset of symptoms. This death occurred in forty-five minutes and was the result of a hemorrhage in the pons of a Negro man aged 36 who, in addition, had syphilitic aortitis and arterio-

TABLE 2.—Relation of Color and Sex to Survival Period of Cerebrovascular Accidents

	All Cases	Hemorrhages	Thromboses	Embolisms
All patients	81.3 days (296 cases)	9.7 days (134 cases)	157.9 days (143 cases)	10.7 days (19 cases)
All white patients	105.5 days (109 cases)	11.5 days (44 cases)	202.9 days (56 cases)	10.7 days (9 cases)
All Negro patients	64.8 days (187 cases)	8.6 days (90 cases)	128.9 days (87 cases)	10.7 days (10 cases)
All male patients	57.3 days (197 cases)	12.4 days (86 cases)	103.9 days (97 cases)	10.6 days (14 cases)
All female patients	129.1 days (99 cases)	4.7 days (48 cases)	271.8 days (46 cases)	11.0 days (5 cases)
White male patients	85.1 days (71 cases)	16.0 days (30 cases)	162.0 days (34 cases)	8.5 days (7 cases)
White female patients	155.8 days (38 cases)	2.0 days (14 cases)	266.2 days (22 cases)	15.5 days (2 cases)
Negro male patients	41.7 days (126 cases)	10.6 days (56 cases)	72.6 days (63 cases)	12.5 days (7 cases)
Negro female patients	112.4 days (61 cases)	5.8 days (34 cases)	276.9 days (24 cases)	9.0 days (3 cases)

sclerotic heart disease. One Negro woman aged 52 with hypertensive heart failure died one hour after the onset of symptoms following a hemorrhage in the right basal ganglion region which ruptured into the lateral ventricle. Of the 296 patients (table 1) only nine (3 per cent) died within two hours. By the end of twenty-four hours sixty-four patients (21.6 per cent) had died. Fifty (16.9 per cent) patients lived one month or longer. During the first twenty-four hours, actual deaths exceeded the expected values significantly in the hemorrhage group, while the thrombotic group exceeded these values during the survival periods of one month or longer. Of the patients who lived one year or longer, only one had a hemorrhage as the basis for his symptoms while the other seventeen were found to have thromboses. The series of embolism was numerically too small to be statistically accurate. However, of nineteen such patients, only one lived as long as three months.

The average survival period for the entire series was 81.3 days (table 2). Those patients whose symptoms were based on thrombosis had an average period of 157.9 days, while those whose symptoms were based on hemorrhage and embolism had an average period of 9.7 days and 10.7 days respectively.

There was a significant difference between the average survival periods of the Negro (64.8 days) and the white (105.5 days) races. There were essentially no racial differences in the patients with hemorrhage and those with embolism; however, in the series with thrombosis the white patients lived for an average of 202.9 days while the Negro patients survived for an average of only 128.9 days. It is of interest to note that Dechard and Schenken,⁶ studying a portion of the same material, found the ratio of hypertension in the Negro and white races to be 55:45; this deviation was even

6. Dechard, G. M., Jr., and Schenken, J. R.: Malignant Hypertension, New Orleans M. & S. J. 91: 275-283 (Dec.) 1932.

more marked in malignant hypertension. It is possible that this may be a factor in the difference in survival periods of the two races after cerebrovascular accidents.

Of an equally significant deviation was the duration of life after cerebrovascular accidents in males (57.3 days) and in females (129.1 days). Here again the essential difference was found to be in the group with thromboses; the males had an average survival period of 103.9 days while the duration of life in the females was more than twice as long (271.8 days). In the group having thromboses, the Negro females (276.9 days) and the white females (266.2 days) had the longest duration of life after the accident. The white males were next, with an average of 162.0 days, while the Negro males had the shortest period (72.6 days). An explanation for these differences cannot be offered at this point.

The age of the patient at the time of the accident was of definite significance in relation to the duration of life after the onset of symptoms (table 3). The survival period after cerebrovascular accidents increased sharply until it reached a maximum during the 30-40 year group, here averaging 141.0 days for thirty-nine cases. After this there was a steady fall. Patients between 21 and 60 usually lived for an average of one month or more, while death usually occurred within one month if the patients were below 20 and above 61 years of age.

In order to attempt to explain the foregoing observations, a study was made of the complications which preexisted or accompanied the cerebrovascular accidents but were not the result of the accidents. These complications were divided into a fatal group (heart failure, vegetative endocarditis, mural thrombi, cardiac fibrillation and flutter, septicemia, uremia and leukemia) and into a group which were not necessarily fatal (hypertension, arteriosclerosis, diabetes, pregnancy, syphilis, and nephritis without uremia). It was found that 40 per cent of the patients with cerebrovascular accidents under 25 years of age had some complication fatal in

orrhage and those with thrombosis had approximately the same duration. In lesions occurring primarily in the region of the basal ganglions, the presence or absence of rupture into the ventricle was a significant factor. In cases in which there was rupture the duration of life averaged seven days, while in those confined to the parenchyma the average survival period was ninety-four days. Patients with lesions limited to the hemispheres survived for the longest period (146 days).

In the embolism series the location of the lesion had little to do with the survival period. There was a

TABLE 4.—*Relation of Site of Single Lesions to Duration of Life After Cerebrovascular Accidents*

Site of Lesion	Total Cases	Cases of Hemorrhage	Cases of Thrombosis	Cases of Embolism
Brain stem.....	3 days (13 cases)	3 days (10 cases)	3 days (3 cases)	
Basal ganglions with rupture into ventricle	7 days (33 cases)	7 days (33 cases)		
Cerebellum.....	18 days (8 cases)	9 days (4 cases)	23 days (4 cases)	
Subarachnoid space	19 days (18 cases)	19 days (18 cases)		
Basal ganglions without rupture	94 days (120 cases)	10 days (39 cases)	141 days (77 cases)	11 days (4 cases)
Hemispheres.....	146 days (56 cases)	14 days (14 cases)	220 days (36 cases)	10 days (6 cases)

slight variation in cases in which there was hemorrhage (three days in the brain stem, nine days in the cerebellum, ten days in the basal ganglions, fourteen days in the hemispheres and nineteen days when it was primarily subarachnoid). The greatest variation was found in the thrombosis group (three days in the brain stem, twenty-eight days in the cerebellum, 141 days in the basal ganglions and 220 days in the hemispheres).

Forty-three patients had multiple discrete lesions. Of these eleven had hemorrhages and had an average survival period of 3.3 days. Twenty-three had thromboses, the average duration of life being fifty-one days. At least nine of the patients having embolisms had multiple lesions, surviving for an average of ten days.

SUMMARY AND CONCLUSIONS

1. Sudden death (within two hours) from cerebrovascular accidents is the exception rather than the rule.

2. Hemorrhage is more apt to be responsible if death occurs within twenty-four hours of the onset of symptoms, while thrombosis is far more common in patients surviving for more than one month.

3. The average survival period after thrombosis is approximately fifteen times as long as after hemorrhage or embolism.

4. There was a distinct difference in the survival periods of the white (105.5 days) and the Negro races (64.8 days). This difference was confined mainly to the patients with thrombosis.

5. There was an equally distinct difference between males (57.3 days) and females (129.1 days). Here again the essential difference was found to be in the group with thrombosis.

6. When apoplexy occurred between the ages of 21 and 60 the average survival period was one month or longer, while death usually occurred within one month when the patient was below 21 or above 60 years of age. The maximal survival period fell within the 30-40 year group, here averaging 141.0 days.

7. As would be expected, the location of the lesion and the number of lesions were important determining factors in the survival period.

TABLE 3.—*Relation of Age of Occurrence to the Survival Period After Cerebrovascular Accidents*

Age at Occurrence	Hemorrhage	Thrombosis	Embolism	Total Cases
0-10 years	13.0 days (2 cases)	..... (0 cases)	3.0 days (1 case)	9.6 days (3 cases)
11-20 years	4.3 days (3 cases)	..... (0 cases)	16.0 days (1 case)	7.5 days (4 cases)
21-30 years	7.0 days (3 cases)	68.8 days (8 cases)	6.8 days (5 cases)	36.8 days (16 cases)
31-40 years	19.1 days (19 cases)	300.1 days (17 cases)	11.3 days (3 cases)	141.0 days (39 cases)
41-50 years	3.6 days (40 cases)	258.4 days (28 cases)	12.0 days (5 cases)	120.8 days (83 cases)
51-60 years	17.9 days (32 cases)	141.6 days (37 cases)	6.6 days (3 cases)	80.9 days (72 cases)
61-70 years	2.0 days (22 cases)	35.9 days (30 cases)	..... (0 cases)	21.9 days (52 cases)
71 plus years	7.7 days (13 cases)	11.5 days (14 cases)	..... (0 cases)	9.1 days (27 cases)

itself, while only 24 per cent of those between 25 and 49 years had such. A fatal complication was present among 35 per cent of those whose ages were between 50 and 75 and 55 per cent of those over 75. This offers at least a partial explanation of the differences in survival periods of different age groups.

As would be expected, the location of the lesion was of great importance with regard to the duration of life after the cerebrovascular accident (table 4). Patients with lesions of the brain stem had the shortest survival period, averaging three days; those with hem-

NEWER CONCEPTS OF DRY LABOR

ARTHUR G. KING, M.D.

CINCINNATI

When theory and evidence disagree it becomes necessary to revise our teaching in favor of the evidence. Such a situation exists in reference to the dilatation of the cervix uteri in labor and the role of the amniotic sac. The exaggeration of the dangers of dry labor, based on hypothetical considerations, has a pernicious effect in that (1) the physician, in common with the public, often overlooks and neglects the real cause of a dystocia once it is ascribed to the "dry labor," and (2) the diagnosis of dry labor, if it is viewed as a complication, often impels the physician to unwarranted and dangerous interference with what is merely a slow parturition.

The fault lies in the older teaching only just now being corrected to some extent in the latest textbooks. Carefully controlled observations of the last fifteen years, as reported by more than a score of different obstetricians, have made untenable the old hypothesis of the dilating wedge action of the bag of waters. Equally untenable is the corollary that its premature rupture is "an unwelcome accident."

The origin of the concept that the cervix is dilated by the amniotic sac precedes the earliest textbooks, although Jacquemier¹ gives credit to Guillemeau, a pupil of Ambroise Paré. The seventeenth century physicians knew that the loss of the amniotic fluid was always followed by labor, but they trifled with logic in declaring that the same fluid was necessary for the process of labor. It was a woman, apparently, who first completely ignored logic and dared to induce labor by deliberately losing the water. Mary Donnaly, an English midwife, ruptured the amniotic sac in 1738 and gave a mother her first live, even though premature, baby in three pregnancies. It may be assumed that less skillful individuals, including physicians, tried the same procedure but with disastrous results, because in 1756 a consultation of physicians vainly tried to dissuade a Dr. Macaulay from doing it. It was in the latter half of this, the eighteenth, century that the medical profession first seriously discussed the role of the membranes and the consequence of their rupture.

Briefly, the old theory was that the membranes and contained amniotic fluid pressed against the cervix with each pain and that the bag of forewaters insinuated itself into the cervical canal. Pressure of the contractions was transmitted to the tiny wedge, which in turn forced open a few fibers of the cervix. As labor progressed the hydrostatic wedge gradually obliterated the cervical thickness and dilated the canal.

Up to a few years ago this theory, unchanged, was taught in most medical schools. But even as far back as the eighteenth century there was marked opposition. Smellie² for example in 1752 stated categorically: "The membranes appear to play no part in labor except to hold in the water necessary for lubrication. Dilatation is accomplished by the head." He warned against deliberate rupture of the membranes, although his reasoning was vague. Denman³ was the leading champion of the wedge theory and taught that rupture of the membranes caused a "derangement of labor" and "tended to protract rather than shorten labor."

The great Baudelocque⁴ took a middle ground. He stated in 1789 that:

Dilatation is not immediately and entirely the effect of that species of wedge . . . as dilatation occurs in the absence of a presenting part at the orifice. . . . Except in cases of flooding or convulsions we ought never to open the membranes before the orifice of the uterus be larger than a crown piece and its edges soft and thin.

The crown piece of that period measured a bit less than 3.5 cm., less than two fingers of dilatation [sic].

America has forgotten one of its most brilliant obstetricians, William Potts Dewees. With penetrating scientific acumen he showed the fallacies in reasoning and the hasty generalizations of Denman. In his thesis for his medical degree from the University of Pennsylvania in 1806 he propounded a different explanation of the mechanism by which the cervix is opened, borrowing somewhat from Baudelocque.

He⁵ stressed the fact that the lower portion of the uterus contained both circular and longitudinal fibers. He stated that the uterine contraction represented the shortening of the longitudinal fibers to overcome the resistance of the circular fibers, which must relax to procure dilatation. No presenting part or wedge is essential, although many factors might influence the degree to which the cervical fibers relax. Any forewaters naturally bulge down into the cervical canal because it is the place of least resistance, but his significant point was that this is a passive process rather than an active one of dilatation. He pointed out that the slightest touch of the finger will frequently rupture the membranes but that manual dilation requires much force and hence the membranes could not exert much positive pressure. He asked how dilatation could occur in the absence of a presenting part or membranes unless by the mechanism which he described. If this mechanism works in the absence of the amniotic sac, why not also with the membranes intact?

A careful survey of the obstetric textbooks since Baudelocque reveals that the various authors, all unconsciously to be sure, copied from their predecessors not only the form, chapter headings and paragraph structure but sometimes even the very phraseology, even in translation. Our contemporary authors are not guiltless in perpetuating pretty combinations. For example, the 1933⁶ edition of one of our standard textbooks⁶ uses the words "gentle, efficient dilator" at almost the same point in the text that Denman in 1805 spoke of "gentle, efficacious dilatation." It is not surprising that, on a subject on which very few scientific data were available, theories should be handed down from one teacher to another without change. Some division of opinion, however, existed on the question of cervical dilatation.

John Burns⁷ about 1800 could not see the membranes as essential to labor but was opposed to interference with nature. He it was who coined the term "meddlesome midwifery," and he taught the careful preservation of the membranes not so much for their own sake but to prevent his students from meddling. It was a case of tempering the wind of theory to the shorn lamb of technical ineptitude. Mme. Boivin⁸ differed with Baudelocque and preached the sanctity of the membranes. Velpeau⁹ leaned to the dilating wedge

From the Department of Obstetrics, University of Cincinnati College of Medicine.

1. Jacquemier, Jean: *Manuel des accouchements*, Paris, 1846.

2. Smellie, William: *Midwifery*, London, 1752, p. 204.

3. Denman, Thomas: *Midwifery*, London, 1805, pp. 236 and 349.

4. Baudelocque, J. L.: *L'art des accouchements*, Paris, 1789, par. 436.

5. Dewees, W. P.: *Essay on Difficult Parturition*, Philadelphia, 1806.

6. De Lee, J. B.: *Principles and Practice of Obstetrics*, ed. 6, Philadelphia, W. B. Saunders Company, 1933.

7. Burns, John: *Principles of Midwifery*, ed. 6, London, 1826.

8. Boivin, Marie G.: *Mémoires de l'art des accouchements*, ed. 2, Paris, 1817.

9. Velpeau, A. A. L. M.: *Midwifery*, translated by Meigs, Philadelphia, 1831.

theory but recognized the lack of supporting evidence. He called for more studies, but it was a hundred years before the call was answered. Ramsbothan,¹⁰ Churchill¹¹ and Chailly¹² favored the wedge theory but first called to their aid in argument the safety of the unborn child, a circumvention of logic still being used.

Jacquemier¹ in 1846 stated that in his experience "the flow of amniotic fluid could take place at the beginning of labor without the dilatation of the cervix being noticeably hindered. If the membranes break the presenting part dilates very efficiently." But after the middle of the century one finds only Sinclair and Johnston¹³ in Ireland and Gunning S. Bedford¹⁴ in the United States opposing the wedge theory. Playfair¹⁵ in England took the middle ground. On the other hand, heartily in favor of the dilating wedge theory and preaching dire results in dry labor, one finds

theory that muscular action alone is responsible for dilatation of the cervix. As an experiment he deliberately ruptured the membranes early in labor of all patients in his clinic. In this country I similarly undertook the investigation as an experimental problem but limited the experiment to strictly normal parturitions with equally normal cases as contemporary controls. The conclusions of Kreis in 1931¹⁹ and my own in 1934²⁰ and 1936²¹ were almost identical.

Corroboration is obtained from two sources: the results of series of inductions of labor by puncture of the membranes, and studies of dry labor as it occurred spontaneously. A careful survey of the literature since 1921 has revealed a total of thirty-four papers on dry labor or rupture of the membranes, involving altogether 14,669 such cases. The material is not homogeneous but the data of each paper have been scrutinized

Summary of Results in Dry Labor

Author	Year	No. of Cases	Length of Labor	Intervention	Morbidity	Fetal Danger
Dorman and Lyon ²⁰	1921	270	Shorter	.....	More	More
Polak, J. O.: Dry Lab	1923	...	.....	.....	.....	.....
Brodhead, G. L.: Dry	1924	182	Shorter	Same	Same	Same
Randall, L. M.: Minnesota Med. S: 325, 1925.	1925	88	Same	.....	.....	.....
Schulze ²⁸	1929	604	Shorter	More	More	Less
Norris ²⁹	1930	196	Shorter	More	More	Less
LaHaye ²²	1930	1,274	Shorter	Less	Less	Less
Kreis ¹⁹	1931	1,250	Shorter	Less	Same	Same
Fitzgibbon, G.: Induction of Labour, J. Obst. & Gynaec. Brit. Emp. 38: 495, 1931.	1931	220	Shorter	Same	Less	Same
Gutmacher and Douglas ²⁴	1931	761	Shorter	Less	Less	Same
Stemmons, J. M.: Induction of Labor at Term, Am. J. Obst. & Gynec. 23: 404 (April) 1932.	1932	132	Shorter	.....	Same	Same
Mason, L. W.: Premature Rupture of the Membranes, Am. J. Obst. & Gynec. 26: 394 (Sept.) 1933.	1933	166	Shorter	.....	Less	Less
Morton, D. G.: Induction of Labor by Artificial Rupture of the Membranes, Am. J. Obst. & Gynec. 26: 323 (Sept.) 1933.	1933	150	Shorter	.....	Same	Less
van Rooy, A. H. M. J.: Dry Labour, J. Obst. & Gynaec. Brit. Emp. 40: 850 (Aug.) 1933.	1933	...	.....	More	Less	.....
Jackson ²³	1934	500	Shorter	Less	.....	Same
King ²⁰	1934	300	Shorter	Less	Less	Same
King, E. L.: Innocuousness of Rupture of the Membranes, Am. J. Obst. & Gynec. 28: 763 (Nov.) 1934	1934	...	Shorter	.....	.....	.....
Woods ²⁶	1934	750	Same	More	More	Same
Stern, S. M.	1934	85	Shorter	.....	Less	Less
Holmes, O.	1934	90	Shorter	Same	Same	Same
Rucker, M. P.: Artificial Rupture of the Membranes, West Virginia M. J. 31: 545 (Feb.) 1935.	1935	716	Shorter	.....	Less	Same
Krahulek, E. J.: Ruptured Membranes at the Onset of Labor, West. J. Surg., Gynec. & Obst. 43: 162 (March) 1935.	1935	205	Shorter	.....	.....	.....
Williams ²⁴	1935	100	Shorter	.....	Same	Same
King ²¹	1936	597	Shorter	Less	Less	Same
Spademan, L. C.: Role of the Amniotic Sac, Am. J. Obst. & Gynec. 31: 645 (April) 1936.	1936	...	Shorter	Same	Same	.....
Ballard, M. B.: Spontaneous Rupture of the Membranes Before Onset of Labor, Am. J. Obst. & Gynec. 32: 44 (Sept.) 1936.	1936	425	Shorter	Same	Same	.....
Plases and Selbert ³¹	1936	681	Shorter	.....	More	.....
Essen-Moeller ²⁷	1936	1,000	Shorter	More	Same	Same
Mathieu and Holman ²²	1937	750	Shorter	.....	More	Less
Sunde ²⁵	1937	1,250	Shorter	.....	More	Same
Wehman, S. E.: Spontaneous and Artificial Rupture of the Membranes, Acta. obst. et gynec. Scandinav. 17: 155, 1937.	1937	360	Shorter	Same	Same	Same
Tennent, R. A.: Induction of Labour by Puncture of the Membranes, J. Obst. & Gynaec. Brit. Emp. 45: 509 (June) 1938.	1938	357	Shorter	.....	.....	.....
Wetterdal ³⁵	1938	1,022	Shorter	.....	.....	Same
Hauch, E.: dinav. 1	1938	220	Shorter	.....	Same	.....

Cazeaux¹⁶ in France, Hodge¹⁷ (who wrote a paper entitled "The Noncontagiousness of Puerperal Fever") in this country and almost the entire German school just coming into prominence. Since American obstetrics of the last fifty years has been influenced largely by the Germans, it is not surprising that the wedge theory and its corollary that "dry labor is usually long, difficult and dangerous" are taught here today.

Credit for the first scientific approach to the problem goes to Kreis,¹⁹ of Strasbourg, who revived Dewees's

critically and the stated conclusions of the author used to form a composite summary which reflects and supports the recent change in attitude. This review is presented in tabular form and is discussed in detail.

INCIDENCE

Dry labor was found to occur in from 7 to 31 per cent of all cases, depending on what standard is used. The lower figure represents cases in which there was a latent period of twelve hours before the onset of labor, the larger figure those in which regular pains at intervals of twenty minutes constituted labor. The average figure was 12 per cent.

LENGTH OF LABOR

If the hydrostatic wedge were a significant element in dilating the cervix, one would expect the absence of it to result in longer labor. On the other hand, if dilata-

10. Ramsbothan, F. H.: Process of Parturition, Philadelphia, 1842.

11. Churchill, F.: Theory and Practice of Midwifery, ed. 2, London, 1850.

12. Chailly, cited by Bedford: Practical Treatise on Midwifery, ed. 2, New York, 1846.

13. Sinclair, F. B., and Johnston, G.: Practical Midwifery, London, 1858.

14. Bedford, G. S.: Principles and Practice of Obstetrics, New York, 1862.

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16. Cazeaux, P.: Midwifery, 3d American from 6th French edition, Philadelphia, 1863.

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18. Kreis, J.: Role de la poche des eaux, Gynec. et obst. 17: 421 (May) 1928.

19. Kreis, J.: Resultats de l'accouchement en 1930, Gynec. et obst. 24: 21 (July) 1931.

20. King, A. G.: Deliberate Rupture of the Membranes Early in Labor, Am. J. Obst. & Gynec. 27: 576 (April) 1934.

21. King, A. G.: Cervical Dilatation in Dry Labor and After Deliberate Rupture of the Membranes, Am. J. Obst. & Gynec. 32: 201 (Aug.) 1936.

tion is accomplished by muscular action alone, dry labor should be the same or even shorter than "wet" labor. Our older textbooks and even our unrevised recent editions state that dry labor is usually longer. This statement was contradicted unanimously. Of the thirty-four authors, two found dry labor of the same duration and thirty-two found dry labor shorter than in the presence of intact membranes.

OPERATIVE INTERVENTION

If the dilating wedge theory were correct, the lack of the amniotic sac should make parturition more difficult. Apparently the only available criterion of difficult labor is the necessity of operative intervention. Here great care must be used in evaluating different studies. It is unscientific to contrast 100 women in whom labor was induced because of disproportion or for bleeding prematurely, with the average group of women with intact membranes. Furthermore, differences in percentages must be significant. The strict experimental work of Kreis¹⁹ and of his pupil LaHaye²² and of mine²³ showed a markedly lower incidence of operative intervention in cases of dry labor. Gutmacher and Douglas²⁴ and Jackson²⁵ found a similar reduction. Of the thirty-four reports in the literature, only seventeen dealt with this phase of the problem, and of these only five listed an increase. Woods²⁶ stated that it was "very slight," Essen-Moeller²⁷ that it was "slight"; Schulze²⁸ pointed out that forceps would have been necessary in two thirds of her cases anyway; Norris,²⁹ with no controls for contrast, admitted that 9 per cent of his cases were very abnormal. The remaining twelve concluded that there was no increase in operative intervention in dry labor.

MORBIDITY

A role usually given to the membranes is that of preventing infection, and dry labor by corollary is supposed to be dangerous from that point of view. That the steady downward escape of fluid tends to wash organisms away or that the site of uterine infection is lateral or external to the membranes is usually forgotten. But the evidence as collected from the literature tends to minimize the value of the amniotic sac.

Of the twenty-seven authors discussing maternal morbidity, seven found only a slight increase, and their data showed that the difference fell within the limits of probable error. Dorman and Lyon³⁰ state that their results were complicated by many factors which would of themselves account for morbidity. Schulze²⁸ included in her series all cases, even some previously infected. Norris²⁹ and Woods²⁶ had but inconsequential differences. Plass and Seibert³¹ and Mathieu and Holman³² dealt with cases of artificial induction. Sunde³³ found an increase only in the presence of a long latent

period. The other twenty of the twenty-seven state categorically that there is no increase in morbidity in dry labor.

DAMAGE TO THE CERVIX

Only two studies take up the question of damage to the cervix, that of Williams³⁴ and my second paper.²¹ The results of the two were the same, namely that there was definitely less cervical damage in primiparas who had experienced a dry labor than in a similar number of primiparas with membranes intact till the end of dilatation. E. A. Schumann in discussing Plass and Seibert's paper³¹ stated that he had observed the same phenomenon.

FETAL MORTALITY

Even the most ardent proponents of the dilating wedge theory have recently modified their arguments and now stress the sanctity of the membranes for the sake of the child. Of twenty-four authors who discussed fetal mortality, only one (Dorman and Lyon³⁰) had a greater fetal mortality in their relatively small series of 270 cases. The other twenty-three authors found dry labor just as safe or safer for the child.

PROLAPSED CORD

In clinics where the fetal heart is not watched regularly and in home deliveries intrapartal fetal deaths occur which are due many times to a partially prolapsed cord. If the membranes have ruptured, the cord usually prolapses fully and the accident is discovered. Measures may then be taken. This is offered as a possible explanation of the incontrovertible fact that, although theoretically there is more danger of prolapsed cord in dry labor, the evidence shows that the general fetal mortality is not increased.

CEREBRAL DAMAGE

In the past year or two the critics of dry labor have been reduced to offering as a defense of the membranes the protection of the child's brain against damage manifest in later life. The only actual evidence on either side is the work of Wetterdal,³⁵ who studied 4,000 parturitions to see the end result twelve years later. He found that the stillbirth rate, the neonatal mortality and the percentage of mental or physical defectives at the age of 12 were not affected either by the accident of dry labor or by the use of forceps. He states: "The premature escape of waters affects neither the mortality, primary or late, nor the percentage of mentally or physically defective children."

CONCLUSIONS

1. A comprehensive survey of the literature since 1921 shows no evidence whatever to support the traditional belief that dry labor is "long, difficult and dangerous."
2. All available evidence drawn from deliberate experimental work, from the results of inductions and from various series of observations shows, on the contrary, that in dry labor (a) the duration is shorter, (b) there is no greater morbidity, (c) there is no greater incidence of interventions, (d) there is less damage to the cervix, (e) the fetal mortality is no greater and (f) there is no adverse effect on the psychologic or physical development of the child.
3. Dry labor should no longer be listed as a complication of parturition and may not be used as an excuse for operative intervention. The cause of dystocia in the presence of prematurely ruptured membranes must be sought for elsewhere.

22. LaHaye, P.: Rupture artificielle de la poche des eaux, *Rev. franç. de gynéc. et d'obst.* 25: 657 (Nov.) 1930.

23. King (footnotes 20 and 21).

24. Gutmacher, A. F., and Douglas, R. G.: Induction of Labor by Artificial Rupture of the Membranes, *Am. J. Obst. & Gynec.* 21: 485 (April) 1931.

25. Jackson, D. L.: Rupture of the Membranes to Induce Labor, *Am. J. Obst. & Gynec.* 27: 329 (March) 1934.

26. Woods, E. B.: Early Rupture of the Membranes, *J. Iowa State M. Soc.* 24: 571 (Nov.) 1934.

27. Essen-Moeller, M. E.: Influence of Premature Rupture of the Membranes on the Course of Labor, *Acta obst. et gynec. Scandinav.* 16: 1, 1936.

28. Schulze, Margaret: Dry Labor, *Am. J. Obst. & Gynec.* 17: 20 (Jan.) 1929.

29. Norris, C. C.: Dry Labor, *Am. J. Obst. & Gynec.* 19: 500 (April) 1930.

30. Dorman, F. A., and Lyon, E. C.: Study of 270 Cases of Dry Labor, *Am. J. Obst. & Gynec.* 1: 595 (March) 1921.

31. Plass, E. D., and Seibert, C. W.: Premature Rupture of the Membranes as a Means of Inducing Labor, *Am. J. Obst. & Gynec.* 32: 785 (Nov.) 1936.

32. Mathieu, A., and Holman, A.: Results of Induction of Labor, *Am. J. Obst. & Gynec.* 33: 268 (Feb.) 1937.

33. Sunde, A.: Spontaneous and Artificial Rupture of the Membranes, *Acta obst. et gynec. Scandinav.* 17: 133, 1937.

34. Williams, Norman: Membranes in Labor, *West. J. Surg.* 43: 216 (April) 1935.

35. Wetterdal, P.: Premature Rupture of the Membranes, *Acta obst. et gynec. Scandinav.* 18: 45, 1938.

4. The accumulated evidence controverts the theory of the hydrostatic wedge mechanism of the dilatation of the cervix, which, although very pretty as a concept, has been doubted ever since its inception.

5. Offered originally in 1806 and revived within recent years, the explanation of dilatation by Dewees does not require the amniotic sac but depends on reciprocal muscular action only. This theory accurately coincides with clinical observation, does not confuse the picture in certain cases of dystocia and should be more widely known.

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Clinical Notes, Suggestions and New Instruments

GONOCOCCIC ARTHRITIS OF THE NEWBORN TREATED WITH SULFANILAMIDE

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JOSEPH BATTAGLIA, M.D., BROOKLYN

A boy baby aged $3\frac{1}{2}$ weeks, a Negro, was admitted to the Pediatric Service of St. John's Hospital April 12, 1939, with painful swelling of the left knee. Three weeks prior to the birth of the child the father acquired gonorrheal urethritis. One week before delivery the mother had migratory joint pains of the wrist, knee and ankle. At the time of delivery she had a profuse vaginal discharge. The infant was born at full term and by spontaneous delivery. He was discharged after the usual postpartum period and no defects were noted.

When the child was 3 weeks old the mother noticed a swelling of his left knee. He kept the knee flexed and any attempt to extend it caused pain. Three days after the onset of the swelling the child was brought to the hospital. There was no history of trauma. His bowels had been regular and there had been no vomiting. The child was acutely ill and weighed 6 pounds $1\frac{3}{4}$ ounces (2,771 Gm.). With the exception of a dry skin and evidence of malnutrition, the positive physical manifestations were confined to the left knee. It was definitely swollen, warm and tender and was held in acute flexion. Any attempt to extend the leg caused severe pain. The swelling was confined to the joint, with a somewhat greater bulge above the patella. The admission diagnosis was suppurative arthritis.

Examination of the blood showed the hemoglobin to be 98 per cent, red blood cells 4,870,000 and white blood cells 21,000, with 70 per cent polymorphonuclear neutrophils, 28 per cent lymphocytes and 2 per cent megalocytes. Examination of the urine was negative. The erythrocyte sedimentation rate was 27 mm. in sixty minutes. X-ray examination on admission showed marked swelling of the soft tissues of the left knee. There was no visible destruction of bone.

On the second hospital day the left knee joint was aspirated and about 2 cc. of thick, yellow pus was obtained. A direct smear of this pus showed many leukocytes and several gram-negative intracellular coffee-bean shaped diplococci. Aerobic and anaerobic cultures showed no growth. On the sixth hospital day the joint was again aspirated and 2 cc. of a similar fluid was obtained. On this occasion culture produced a diplococcus with the cultural characteristics of gonococci. Smears and cultures taken from his eyes, ears, nose, mouth, rectum and urethra yielded no gonococci. Sulfanilamide therapy was started with 0.07 Gm. per pound of body weight a day. On the eighth hospital day the concentration of sulfanilamide in the blood was 2.8 mg. free and 4.2 mg. total. The drug was increased to 0.14 Gm. per pound of body weight daily. On the twelfth hospital day the swelling had markedly diminished and a tap resulted in the aspiration of a small amount of turbid fluid. The concentration of sulfanilamide in the blood was 5 mg. free and 7 mg. total. At this time the dose of sulfanilamide was increased to 0.2 Gm. per pound a day. The swelling had subsided and tenderness had diminished on the fourteenth hospital day. The level of sulfanilamide in the blood at this time was 9.5 mg. free and 11.1 mg. total.

On the sixteenth hospital day, sulfanilamide was discontinued. One week later it was noticed that the knee had begun to swell again. Two-tenths Gm. of sulfanilamide per pound daily was again given. The swelling promptly subsided and four days later treatment was again discontinued and the child has remained well since.

COMMENT

The important features in a case of gonococcic arthritis occurring in the newborn period here presented were, first, a history of infection in the parents; second, the appearance of the arthritis without an evident avenue of infection and, third, recovery by sulfanilamide treatment. The interesting feature of the treatment is the need to overtreat, as shown by the recurrence of symptoms when treatment was stopped too soon.

In 1885 Clement Lucas¹ reported three cases of arthritis in the newborn associated with gonorrheal ophthalmia. After reporting the first case he received a great deal of criticism for considering the gonorrheal infection the cause of the arthritis. In the face of such criticism he reported two other cases which he believed proved his point. Unfortunately Lucas did not have the bacteriologic proof of the similarity of organisms in the infected eye and the joint fluid. Deutschmann² in 1890 reported two similar cases in both of which he discovered gonococci in the fluid aspirated from the affected joints. Höck³ in 1893 was able to produce a culture of gonococci in his case of gonococcic arthritis. Altland,⁴ Brehmer,⁵ Holt⁶ and Hoch-eisen⁷ soon afterward confirmed the opinion of Lucas and the studies of Deutschmann.

There have been two series of cases of gonorrheal arthritis of the newborn reported in America, one by Holt in 1905 and the other by Cooperman⁸ in 1927. Holt reported twenty-six cases, nineteen in males and seven in females. Of these twenty-six, five were mono-articular and twenty-one polyarthritic. Cooperman reported forty-four cases studied during a hospital epidemic in Philadelphia. Of the forty-four, ten were single joint cases and thirty-four were polyarthritic. Others who have reported single cases of gonorrheal arthritis in the newborn are Rohr,⁹ di Bella,¹⁰ Pritizi,¹¹ Knauer,¹² Wahlberg,¹³ Canino,¹⁴ Tagliaferri and Vitturelli¹⁵ and most recently MacLennan.¹⁶

In 1905 Holt suggested that the term gonococcic arthritis be substituted for gonorrheal arthritis, in order to remove the implication that these children suffer from a venereal disease. Holt also mentioned the widespread interest that this subject holds because of its connection with many branches of medicine. It has a definite interest for the orthopedist because of the joint manifestations; it is often noticed and has been reported by ophthalmologists, who notice it while treating ophthalmia neonatorum; the obstetrician is necessarily interested because most mothers of these children have gonorrheal infection; the subject of gonococcic infection of the newborn interests pediatricians because it is part of the problem of sepsis of the newborn.

There is evidence that the various orifices of the body can serve as avenues of entrance for the gonococci. In many of the cases studied the joint manifestations were preceded by definite infections of the eye. Cooperman states that in eight of his cases a definite proctitis was present from which gonococci could be recovered. Canino noticed a profuse nasal discharge in his case which on smear showed groups of gonococci. On the strength of this finding the author suggests that the prophylaxis of Credé be applied to the nose as well as to the eyes. In one of his fatal cases Holt found a tracheal abscess which contained pus in which there were many gonococci. Many of the cases occurring in girls showed a vaginitis and some urethri-

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2. Deutschmann, R.: *Arch. f. Ophth.* 36: 109, 1890.
3. Höck, H.: *Wien. klin. Wchnschr.* 6: 736, 1893.
4. Altland, W.: *Klin. Monatsbl. f. Augenl.* 40: 294, 1902.
5. Brehmer, C.: *Deutsche med. Wchnschr.* 31: 64, 1905.
6. Holt, L. E.: *New York M. J.* 81: 521, 1905.
7. Hocheisen: *Arch. f. Gynäk.* 79: 415, 1906.
8. Cooperman, M. B.: *Gonococcus Arthritis in Infancy*, *Am. J. Dis. Child.* 33: 932 (June) 1927.
9. Rohr, F.: *Ztschr. f. Kinderh.* 22: 356, 1919.
10. di Bella, V.: *Pediatrics* 31: 146 (Feb. 1) 1923.
11. Pritizi, O. L.: *Wien. klin. Wchnschr.* 37: 1312 (Dec. 18) 1924.
12. Knauer, H.: *Monatschr. f. Kinderh.* 29: 725 (March) 1925.
13. Wahlberg, K.: *München. med. Wchnschr.* 72: 770-771 (May 8) 1925.
14. Canino, R.: *Pediatrics* 39: 264 (March 1) 1931.
15. Tagliaferri, F., and Vitturelli, D.: *Riv. d'ostet. e ginec. prat.* 14: 113 (March) 1932.
16. MacLennan, J. M.: *Brit. M. J.* 2: 121 (July 18) 1936.

tis. No cases of urethritis in boys have been recorded. More interesting are the cases such as ours, in which there is no focus of infection. This observation was first made by Holt. In eighteen of his cases in males he could not find an avenue of entrance. He suggested the mouth as the most probable entrance gate. Knauer and Butti and Cucullu,¹⁷ when faced with the same dilemma, suggested the umbilical cord as the most likely portal of entry. Whatever the answer may be, the fact remains that not uncommonly gonococcal arthritis is seen in the newborn without any visible focus of infection and no demonstrable port of entry.

One or more joints become involved anywhere between the fifth day and the fifth week. Of the eighty-seven cases discovered in the literature, 21 per cent showed a single joint involvement and 79 per cent presented more than one joint involved. In the polyarthritic cases the several joints may be involved successively or several joints may appear swollen at once. The disease has a special predilection for knees and ankles, but almost any joint can be involved. In Cooperman's cases there were six cases of vertebral joint disease, and Canino reports a case in which the joint between the body and the ensiform process of the sternum was affected. Holt records one case of temporomaxillary arthritis and MacLennan reports a case in which the thumb was involved.

The pathologic changes occurring in and about the joints are periartthritis, suppurative arthritis and nonsuppurative arthritis, in the order of frequency. Knauer and Cooperman mention the occurrence of prepatellar bursitis when the knees are involved. Superficial abscess over the joints involved has been described. A destructive lesion occurring in one of Cooperman's cases and in the case of Galdi and Gimbirassi¹⁸ was a tenosynovitis. Butti and Cucullu encountered a subperiosteal abscess of the lower end of the femur in their case of gonococcal arthritis. Most writers stress the absence of bone changes. However, Cooperman describes roentgenologic evidence of osteomyelitis, which cleared up spontaneously in several of his cases.

If one keeps the condition in mind it should not offer great diagnostic difficulty. The conditions with which it may be confused are rheumatic arthritis, syphilitic joints, epiphysitis and nongonococcal septic arthritis. For the first it may be said that rheumatic arthritis is almost unknown in the newborn period. Syphilitic joints can be suspected and ruled out by serologic tests. Epiphysitis, as Lucas states, is not a problem because the epiphysal area is not involved. The nongonococcal suppurative lesions are differentiated by examination of aspirated fluid. Of great help in diagnosis is the evidence of gonococcal infection elsewhere, which occurs in a large number of cases. Clinically one finds swollen, tender and sometimes fluctuant joints. The skin over the swelling is usually inflamed and glistening. Any attempt to move the joint will cause severe pain. Associated with the joint disorders there is usually a moderate febrile reaction, anorexia and moderate leukocytosis. The prognosis of gonococcal arthritis is usually said to be good. That is the opinion of most writers on this subject. There are enough deviations from this generalization to cause one to be more guarded in the prognosis. There were fourteen deaths in twenty-six cases reported by Holt. Fatalities are recorded in one of the two cases reported by Deutschmann, the one case reported by Brehmer and in Höck's case, so that the mortality rate for the eighty-seven cases studied is about 20 per cent. It is also stated that the expectancy of complete functional recovery in the joints is good. Bad results have been recorded in one of Holt's cases which resulted in ankylosis, and the finger deformities reported by Cooperman and Galdi and Gimbirassi following tenosynovitis. Cooperman also reports bad results in cases involving the hip joint in which subluxation was a common and invalidating feature. The use of sulfanilamide may alter the outlook in these cases, but past experiences have not been uniformly good.

Other than the surgical treatment there is but little evidence that treatment so far has influenced the course of the disease. The first steps have been and should continue to be directed

at clearing such foci as the eyes, the urethra, the rectum or the vagina. Splinting in one form or another was used by every one who has reported on this condition. It was best done by Cooperman, who applied plaster cast splints in most of his cases. Incision and evacuation of pus has been reported by Holt, by Cooperman and by Butti and Cucullu. This form of treatment followed by diathermy gave very satisfactory results in Cooperman's hands. Rohr, Pritizi, Tagliaferri and Vitturelli and Butti and Cucullu used intramuscularly a vaccine containing a number of strains of gonococci and 10 per cent strong protein silver. Gonococcus vaccine was used by di Bella, Cooperman and Canino. Cooperman mentions that in his estimation it did not alter the course of the disease. To the best of our knowledge, ours is the first case of gonococcal joint of the newborn which has been reported as treated with sulfanilamide. Colston, Dees and Harrill,¹⁹ Simmons and Dunn²⁰ and Keefer and Rantz²¹ have reported cases of gonococcal arthritis in adults treated with sulfanilamide. In comparing the duration of the illness in our case with the duration of illness reported heretofore, we feel that sulfanilamide may be a better therapeutic agent than any used heretofore.

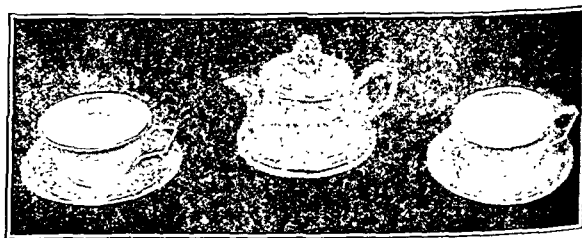
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TOY DISHES AND ACUTE PLUMBISM

THOMAS K. RATHMELL, M.D., AND FREDERICK L. SMITH 2D, Ph.D., NORRISTOWN, PA.

The search for the cause of an acute gastric condition in children frequently presents a fascinating detective problem. When the common factors of acute appendicitis and of disorders due to green fruits, worms, acidosis of variable etiology and sluggish bowel function have been eliminated the search terminates.

A fond parent recently purchased a set of toy dishes, shown in the illustration, from a reputable Philadelphia department store. The salesgirl represented these as of aluminum composition and they were so labeled, although they were inexpensive. The dishes were presented to the child (age 22 months) in time for the evening meal and were immediately used as containers for small quantities of orange juice, which with stewed prunes and a commercial cereal food for children, of unimpeachable composition, constituted the evening meal.



Toy dishes, use of which resulted in acute plumbism.

The supper was given at 5:30 p. m. At 9:30 the same evening, approximately twenty minutes after retiring, the child was awakened from sleep by sudden forceful vomiting of mouthfuls of fluid material in which all foods consumed at the evening meal were readily identified. The child's temperature and pulse were not elevated; the skin was clammy with perspiration and pale; thirst was a definite subjective complaint; the abdomen was soft. Paroxysms of vomiting recurred every forty-five minutes, and it was only after the third vomiting spell that the child was able to ingest and retain an ounce of milk.

For the next eight hours the child's sleep was irregular and fretful, and a frequent request for fluids was noted by the

17. Butti, I. V., and Cucullu, A. C.: *Arch. argent. de pediat.* 4:203 (March) 1933.

18. Galdi, F., and Gimbirassi, A.: *Rev. Asoc. méd. argent.* 45:1592 (Dec.) 1932.

19. Colston, J. A. C.; Dees, J. E., and Harrill, H. C.: *South. M. J.* 30:1165 (Dec.) 1937.

20. Simmons, E. E., and Dunn, F. L.: *Nebraska M. J.* 23:451 (Dec.) 1938.

21. Keefer, C. S., and Rantz, L. A.: *Am. J. M. Sc.* 197:165 (Feb.) 1939.

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parents. The following day recovery was complete, except for an objective lassitude.

In searching for the cause of this acute gastric condition we were led to the conclusion that since the toy dishes were introduced into the child's environment on that particular day they must have constituted the etiologic factor. Examination showed that they were etched.

The dishes were confiscated and examined for lead by one of us. Analysis by the diphenylthiocarbazone method¹ showed the following lead content: 20 cc. of plain orange juice, 0.0000 mg.; 20 cc. of orange juice from the toy teapot and the unused toy cup, 0.0113 mg., and lead extracted per cubic centimeter of orange juice, 0.0006 mg.

The child's gastric condition resulted from acute plumbism. The acids of the orange juice extracted the lead from the so-called aluminum dishes. It is most interesting that the toxic phenomena of acute plumbism resulted from ingestion of approximately 0.0113 mg. of an organic lead compound.

It was determined that the toy dishes were manufactured in the United States, but absence of other labels prevented further identification. Fortunately no serious sequelae have resulted to date from the acute plumbism. However, as long as there are no statutes to prevent the use of lead compositions in the manufacture of children's toys and reputable department stores will offer such a type of manufactured goods for sale to the public, it is essential for physicians to recognize the harmful potentialities of toy dishes and appreciate acute plumbism as one of the factors in the acute abdominal conditions of children.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.—Ed.

THE THERAPY OF HEAD INJURIES

IN COLLABORATION WITH DR. ADRIAN VERBRUGGHEN

The gravity of head injuries (average mortality rate now about 15 per cent at ward 22, Cook County Hospital) makes careful, cautious and conservative treatment imperative. It was formerly 38 per cent.

The difficulty of making a complete diagnosis promptly enough for these unconscious and critically injured patients necessitates a simple and rather obvious classification that at once suggests appropriate treatment. The following may serve the purpose: class A, "in extremis" cases; class B, grave cases; class C, mild cases; class D, cases in which new symptoms develop, and class E, cases in which sequelae develop.

CLASS A. "IN EXTREMIS" CASES

A patient in profound collapse (almost pulseless) and in deep coma (with no reaction to supra-orbital pressure), who may have multiple injuries, is not in a condition for drastic treatment. The best that can be done for him is:

1. *Absolute Rest.*—Permit no disturbance whatever of the patient. The patient must not be left unattended for even a moment. Stertor must be prevented.

1. Smith, Frederick L., 2d.; Rathmell, Thomas K., and Marcell, George E.: The Early Diagnosis of Acute and Latent Plumbism, *Am. J. Clin. Path.* 8: 471-508 (Sept.) 1938.

2. *External Heat.*—Place in a heat cradle, or pack the patient with hot water bottles outside a blanket, with precautions against burns.

3. *Dextrose Solution (10 Per Cent) Phlebotoclysis.*—By drip method 1,000 cc. is given to counteract collapse and cerebral edema. This also acts as a stimulant to the circulation. Sucrose solution may be useful.

4. *Hypodermoclysis.*—Physiologic solution of sodium chloride, not more than 500 or 1,000 cc., is given, according to the state of hypohydration. "Pushing fluids" neutralizes the dextrose osmotherapy aimed at.

5. *Stimulants.*—Caffeine with Sodium Benzoate, a 0.5 Gm. ampule, intramuscularly or in phlebotoclysis every four hours, is required if the circulation is much enfeebled. Other stimulants, such as Strychnine, may be tried.

6. *Surgery or Roentgenograms.*—These are contra-indicated while the patient is in collapse; so is lumbar puncture.

If the patient survives for a few hours, he is treated as a patient of class B.

CLASS B. GRAVE CASES

The coma is relatively deep, but supra-orbital pressure may cause movements of the extremities. The superficial reflexes are absent and the pupils react very poorly to light. After a few hours the pulse becomes slow and bounding and the blood pressure rises to become fairly high. The reflexes may return. There is usually involuntary urination; but retention may occur and require catheterization. The patient may remain in this condition for many hours and even days. His danger comes from high intracranial pressure with terminal failure of the medulla. The increased intracranial tension is due in the first few hours to hemorrhage, later to a combination of edema and hemorrhage. If the patient's life can be prolonged until the tendency to increased intracranial pressure has been relieved and the medulla is no longer in danger of being compressed, the patient may survive.

The pulse and the blood pressure must now be charted at least every hour and preferably on the same chart. If they remain parallel, the prognosis is temporarily good. If they move apart, the pressure within the cranial cavity is increasing and drastic measures must quickly be adopted. If they run rapidly together, i. e. the blood pressure falls and the pulse rate rises with deepening coma, the medulla has failed and the case is hopeless.

One should attempt from time to time to estimate the depth of the coma by the patient's reactions to loud questions, whether his state of consciousness is improving or becoming worse, and to ascertain occasionally by means of supra-orbital pressure whether the patient moves all four extremities.

The following treatment should be resorted to:

1. Absolute rest with from 15 to 45 degree elevation of the head of the bed. This should be instituted as soon as the patient emerges from collapse.

2. External heat, if temperature is subnormal.

3. Dextrose solution (10 per cent) phlebotoclysis, 1,000 cc. given twice a day, say at noon and at midnight.

4. Fluid intake. This must be adjusted in accordance with the need for osmotherapy. A negative fluid balance should be maintained as long as there is need for reduction of intracranial pressure. Hypodermoclysis of 500 or 1,000 cc. of physiologic solution of

sodium chloride might be given twice a day, most appropriately just prior to the lumbar punctures.

5. Spinal fluid drainage twice a day, say at 6 a. m. and 6 p. m., so that something is done every six hours to reduce intracranial pressure. To do this safely, the fluid must be permitted to escape very slowly; and to do this scientifically, a spinal manometer¹ is required, as one should aim to cut the pressure down to one half. If a manometer is not available, 40 or 50 cc. of the bloody spinal fluid should be removed. A patient with a basal skull fracture who is draining cerebrospinal fluid from the ear or nose does not need lumbar puncture, as such puncture would tend to reverse the flow of fluid from the nose or ear with possibly resulting infection.

As long as the spinal fluid pressure is above 200 mm. of water the patient should be kept propped up and the outlined treatment continued. If spinal pressure falls below 100, the patient should be kept flat and measures aiming at reduction of intracranial pressure are contraindicated.

The treatment of children differs somewhat from that of adults, as children have most amazing recuperative powers. After the collapse has passed off, it is rarely necessary to do anything but observe them. Occasionally dextrose intravenously and lumbar puncture are indicated but decompression practically never.

6. Decompression. In adults, if after forty-eight hours of this treatment the patient's condition is still unchanged, right subtemporal decompression should be considered. The decompression should be wide (3 inches in diameter) with a wide dural opening.

7. Stimulants to circulation. These are given only if required (see Therapy of Circulation Insufficiency).

8. Sedatives. These must be given for restlessness, as it is important to prevent straining, which may result in hemorrhage.

9. Treatment of scalp wounds. As soon as the collapse has passed, the hair is shaved for a distance of at least 1 inch around the cut. The scalp is cleansed thoroughly with Antiseptic Solution of Iodine and 70 per cent alcohol. The edges should be freshened by clipping off necrotic tissues with scissors. After the exposed cranial bones have been examined, the wound should be closed with a few interrupted silkworm gut sutures. If the sutures are well placed and the galea aponeurotica is taken in each stitch, it will not be necessary to pay attention to individual bleeding points. The scalp is very resistant to infection on account of its generous blood supply. Nevertheless, care and thoroughness are essential to good results.

10. Treatment of fractures: (a) Linear fracture of the vault needs nothing further done than that roentgenograms be taken later when the patient's condition warrants his being moved, for possible medicolegal purposes.

(b) Depressed fractures in children are best left alone, at least temporarily, unless there is definite evidence of involvement of cerebral substance. In adults a simple depressed fracture should be elevated any time in the first few days after the accident unless there is definite contraindication, such as sepsis; for in adults depressed fractures, especially in the frontal region, frequently give rise to epilepsy. Depressed fractures are nearly always compound.

(c) Compound fractures. These should generally be operated on as soon as collapse has passed off, within five or six hours. If operation must be delayed, it is best to wait two or three weeks until the scalp has healed and sepsis is no longer considered to be present.

The procedure can be carried out under local anesthesia by means of a field block at a distance from the injured area. The original laceration should be extended to obtain a good view of the bones. The depressed bone should be elevated and loose fragments removed. If the dura is intact, nothing further should be done. If the dura is lacerated, a drain should be inserted through it and left for forty-eight hours. It is useless to follow injuries into brain tissue unless there is definite evidence of a foreign body near the surface.

(d) Basal skull fractures. These are much more common than those of the vault. The reason for this can easily be seen by examining the base of the skull and noting the thinness of it and the many foramina that weaken it in this region.

When cerebrospinal fluid escapes through the ear, keep the ear clean by sponging out the pinna with alcohol and by applying a large absorbent sterile dressing. The patient should be turned on the draining side. After a few days the leak will cease spontaneously. Under no circumstances should instruments be inserted down to or through the drum membrane, nor should spinal puncture be done. The former will only tend to introduce infection to the meninges; the latter is unnecessary and tends to reverse the flow of fluid, which invites infection. Patients with rhinorrhea should be kept sitting up.

CLASS C. MILD CASES

When a patient is brought into the hospital in a semi-conscious condition following a head injury, even though he should have a slight degree of collapse, the prognosis is fairly good. He responds to loud questioning or at least to supra-orbital pressure. He may become relatively conscious and be able to talk coherently; but he may be very restless, irritable and irrational. Such patients are liable suddenly to become delirious. Hence they need watching. Blood pressure and pulse are relatively normal and all extremities are moved.

The patients should be observed several times a day to determine whether they move all their extremities and to guard against the insidious onset of coma (see Ingravescens Cases).

The treatment should be largely symptomatic and expectant, after the primary indications have been attended to. These are:

1. Absolute rest in bed should be prescribed, which for a patient with bloody spinal fluid should be a week or ten days after he is symptom free, whereas a patient with clear fluid may be allowed up when he is symptom free.

Sedatives may be required to keep the patient quiet and paraldehyde is probably best. It may be given in doses of from 8 to 15 cc. by mouth, according to the weight of the patient and the degree of excitement, or it may be given by rectum dissolved in an equal amount of alcohol and eight times the quantity of water (cf. prescription 12, Paraldehyde for rectal Administration. Therapy of Insomnia) in the form of a retention micro-enema. Phenobarbital may be given in doses of 0.10 Gm. (tablet) by mouth every four hours as occasion demands; or, if injection is required, in the form of

1. A manometer may be made from a piece of narrow bore glass tubing 35 cm. long, the last 3 cm. bent to a right angle, with from 4 to 5 cm. of rubber tubing and an adapter to fit the spinal puncture needle. Halve the distance that the bloody fluid rises in the glass tube. (Cost, 15 cents for the adapter.)

phenobarbital sodium in doses of from 0.12 to 0.25 Gm. hypodermically, intramuscularly or intravenously, according to the urgency of securing the effect. Phenobarbital sodium is furnished in sterile form, as powder in ampules, because its aqueous solution is not stable. It must be dissolved just before administration in boiled and cooled sterile water, in which it dissolves even to the degree of 20 per cent, so that 2 cc. can easily carry the full dose of the salt should this be demanded.

Never give morphine to a patient with a head injury, as it still further depresses the already depressed respiratory center. Codeine phosphate 0.05 Gm. hypodermically (dissolved in 2 cc. of water) or 0.10 Gm. by mouth is indicated. Amytal and, to a lesser degree, pentobarbital sodium appear to cause delayed excitement in some persons and therefore should not be used.

Restraints, such as fastening the legs in anklets or having side boards put on the bed, are also required, as many of these patients are so restless that they may fall out of bed or so disoriented that they may wander about in the ward and even fall out of windows or down stairways. Not a few of them are under the influence of alcohol.

2. Lumbar puncture may be done, when the patient is tractable and quiet, to ascertain the presence or absence of blood in the spinal fluid. The treatment of a patient with blood in the spinal fluid must be much more rigid and the prognosis more guarded than in a patient whose cerebrospinal fluid is clear.

CLASS D. PATIENTS DEVELOPING NEW SYMPTOMS

(a) *Extradural Hemorrhage*.—The classic description of this syndrome includes an injury to the head with unconsciousness lasting from a few minutes to a few hours. There is then return to consciousness, though usually the patient is excited and restless. This lucid interval lasts for a few hours, to be followed by gradually increasing coma and death. While this description may hold true for some cases, there are many cases of extradural hemorrhage that it necessarily does not fit. A lucid interval need not occur, for an injury sufficiently severe to cause an extradural hemorrhage may be severe enough to cause an intradural hemorrhage and cerebral edema. Because of the latter the patient may never regain consciousness as in the classic description; and, unless he is carefully observed, the evidence of extradural clot may go unnoticed. Many cases every year go through this atypical syndrome and a few of them come to autopsy. In about 10 per cent of cases of head injury coming to autopsy, extradural hemorrhage is regarded as the principal cause of death. It seems highly improbable that, if the patients had presented the classic picture, it would not have been recognized.

It appears then that not all cases, perhaps not even the majority, of extradural hemorrhage go through what has been described as the typical pattern. The only reliable indication appears to be the gradual onset of hemiplegia whether the patient has a lucid interval or not. The hemiplegia practically always develops in forty-eight hours. Hence it is necessary to be sure that the patient moves all four extremities on admission and that he continues to be able to move them. In the unconscious patient this can be ascertained by firm pressure on the supra-orbital nerve, at which the patient will make more or less purposeful attempts to remove the painful stimulus. If hemiplegia is present, the affected side will not be moved. This early onset of hemiplegia combined with deepening coma and possibly a dilated pupil on the side of the lesion constitutes

the most reliable indication for operative intervention. Should the spinal fluid be clear in the presence of this syndrome, the hemorrhage is almost certainly extradural; but if the spinal fluid is bloody it is of no diagnostic value for, as already mentioned, a violence sufficient to cause extradural bleeding may also cause intradural hemorrhage. The presence or absence of extradural hemorrhage can easily be ruled out by placing a burr hole in the appropriate part of the skull under local anesthesia.

Hemiplegia or monoplegia may be caused by a depressed skull fracture, but of course in these cases the paralysis is present from the moment of the injury.

(b) *Chronic Subdural Hematoma*.—Contrary to the general impression, encysted collections of blood beneath the dura may occur very rapidly. A collection of this kind was evacuated four days after injury and the spinal fluid was only faintly yellow. The most common variety presents definite evidence of its presence from ten to twenty-one days after injury, though weeks or months may elapse before any clearcut manifestations of its presence can be recognized. The patient may have had dizziness; later he becomes excitable and somewhat irrational. Signs of oculomotor palsy with a dilated pupil on the homolateral side may develop early and jacksonian attacks are not uncommon. Finally the patient becomes more drowsy and hemiplegia develops. The eye signs may be absent, but not the coma or the hemiplegia. The spinal fluid, if yellow, presents additional evidence in favor of subdural hematoma, but the presence of clear spinal fluid does not rule it out. These patients present peculiar variations in their condition; at one time they may be very stuporous and later they may appear relatively alert.

The injury causing the hematoma may be trivial. Many of the patients with chronic subdural hematoma are alcoholic. This is probably because alcoholic patients are particularly liable to injury.

The presence of localizing signs will lead to the placing of a burr hole in the appropriate parietal region and when a nick is made in the dura the diagnosis can be established. The clot may be evacuated through one or several burr holes. It is not necessary to turn down an osteoplastic flap. Bilateral hematomas are fairly common.

CLASS E. CASES WITH SEQUELAE

Post-traumatic headache may be treated by lumbar puncture, 50 cc. of fluid being removed and the patient being kept in a recumbent position for some time. If it persists, encephalography has given some relief in a certain percentage of cases.

For meningitis, see Therapy of Meningitis.

Brain abscess is a possible sequela of compound injuries to the head. Adequate and skilful attention to the injured part will tend to minimize its occurrence.

Post-traumatic epilepsy is often the sequela of an unelevated depressed skull fracture, especially in the frontal region. However, it frequently occurs in the absence of gross bony deformity and is due to arachnoidal adhesions or cicatricial contraction of some part of the cerebral cortex. Operation is indicated if the lesion can be located by clinical signs, encephalography or both.

Fractures through the petrous portion of the temporal bone sometimes produce a peripheral nerve injury to the facial nerve. In almost all cases this is transient but, if it persists after six months, spinofacial or some other type of anastomosis frequently gives satisfactory results.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

MANGANESE IN THE TREATMENT OF DERMATOLOGIC DISORDERS

MANGANESE PREPARATIONS PROPOSED FOR PARENTERAL ADMINISTRATION IN THE TREATMENT OF VARIOUS CUTANEOUS DISORDERS, INCLUDING PUSTULAR ACNE, ACNE VULGARIS, FURUNCULOSIS, PSORIASIS, ROSACEA AND SYCOSIS VULGARIS, HAVE LONG BEEN MARKETED BY MANY PHARMACEUTIC MANUFACTURERS. FIFTEEN YEARS AGO MANGANESE BUTYRATE ATTRACTED SOME ATTENTION AS AN AGENT PROPOSED FOR USE IN "INFECTIONS DUE TO THE STAPHYLOCOCCUS, ESPECIALLY FURUNCULOSIS," AND AT THAT TIME TWO AMERICAN FIRMS REQUESTED ACCEPTANCE BY THE COUNCIL OF SOLUTIONS OF MANGANESE BUTYRATE. THE COUNCIL FOUND THE EVIDENCE FOR THE THERAPEUTIC USEFULNESS OF MANGANESE BUTYRATE UNACCEPTABLE AND POSTPONED FURTHER CONSIDERATION OF THE DRUG TO AWAIT THE APPEARANCE OF DATA WHICH COULD BE CONSIDERED TO AFFORD ADEQUATE SUBSTANTIATION OF THE THERAPEUTIC CLAIMS ADVANCED BY THE INTERESTED PROMOTORS OF THIS FORM OF THERAPY. ALTHOUGH FIFTEEN YEARS HAS ELAPSED SINCE THE COUNCIL FOUND THE AVAILABLE EVIDENCE INSUFFICIENT TO PERMIT RECOGNITION OF THE THERAPEUTIC USEFULNESS OF MANGANESE BUTYRATE, THERE HAS NOT YET BEEN RECEIVED FROM EITHER OF THE TWO FIRMS ORIGINALLY CONCERNED, OR FROM ANY OTHER FIRMS INTERESTED IN THE PROMOTION OF MANGANESE THERAPY, THE ADDITIONAL EVIDENCE REQUIRED BY THE COUNCIL. ON THE CONTRARY, THE COUNCIL HAS RECEIVED, IN THE FORM OF THE CLINICAL REPORT OF DR. MAURICE SULLIVAN WHICH FOLLOWS, EVIDENCE WHICH STILL CASTS SERIOUS DOUBT ON THE VALIDITY OF THE CLAIMS ADVANCED BY SOME MANUFACTURERS THAT MANGANESE COMPOUNDS EXERT A BENEFICIAL INFLUENCE IN THE TREATMENT OF DERMATOSES. ON THE BASIS OF THE EVIDENCE AVAILABLE AT THE PRESENT TIME THE COUNCIL REAFFIRMS ITS EARLIER ATTITUDE TOWARD THE THERAPEUTIC USE OF MANGANESE COMPOUNDS IN DERMATOSES AND AGAIN DECLARES PARENTERAL MANGANESE PREPARATIONS PROMOTED FOR THE TREATMENT OF SUCH CONDITIONS NOT ACCEPTABLE FOR NEW AND NONOFFICIAL REMEDIES.

THE COUNCIL WISHES AT THIS TIME TO EXPRESS ITS APPRECIATION TO DR. SULLIVAN FOR MAKING THE FOLLOWING REPORT AVAILABLE.

PAUL NICHOLAS LEECH, Secretary.

MANGANESE HYDROXIDE

IN THE TREATMENT OF ACNE VULGARIS, PUSTULAR ACNE, FURUNCULOSIS, SYCOSIS VULGARIS AND PSORIASIS

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That manganese is not an inert element in relation to some aspects of growth, reproduction and metabolism is fairly certain.¹ Elimination of manganese from an otherwise normal experimental diet has been shown to produce sterility in the male and interference with normal lactation in the female.² A constant constituent of plants, it may have some important functions in their metabolism,³ and it appears that the presence of manganese increases the oxidase reaction. Within certain concentrations it stimulates antitoxin formation,⁴ the

autolysis⁵ and the respiration⁶ of animal tissues. Manganese has been found to be present in practically all human tissues.⁷ It is stored mainly in the liver.⁷ Absorption from the gastrointestinal tract is slow and incomplete.⁸ Excretion after oral and subcutaneous administrations is partly in the bile, mainly in the feces and perhaps also through the colon.⁹ Urinary excretion is very moderate, and the increase in the manganese level of the blood is only temporary.¹⁰ The role of a catalytic agent stimulating hemoglobin formation has been ascribed to manganese.¹¹ However the evidence brought forward to show that the administration of manganese compounds has a favorable effect on the formation of blood is as yet not acceptable.¹²

That manganese exerts a beneficial influence in the treatment of dermatoses is not at all certain and has no sound experimental basis. Dermal changes in animals fed on manganese-free diets have not been reported.¹³ Bohnstedt's conclusion¹⁴ that colloidal manganese promoted healing of psoriatic lesions by increasing oxidation in epidermal cells was founded on the assumptions of von Kerkoff that manganese acts as a mineral activator stimulating oxidation and that it is an acceptor of liberated hydrogen. Based on the actual and presumed properties of this drug and its compounds, many reports of its beneficial action in the treatment of dermatoses have appeared since its introduction during the World War. It was employed principally in the treatment of abscesses and furuncles. The British¹⁵ were especially enthusiastic over the effects of manganese products. It has been advertised for the treatment of carbuncles, furunculosis, abscesses, acne, sinusitis,¹⁶ dermatitis herpetiformis, erysipelas, impetigo contagiosa, psoriasis, sycosis vulgaris, urticaria,¹⁷ gonococcal urethritis, "metastatic gonorrhea," epididymitis,

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From the Department of Dermatology and Syphilology, Western Reserve University, Cleveland (service of Dr. H. N. Cole and Dr. J. R. Driver), and the Skin Clinic of the Johns Hopkins Hospital, Baltimore (service of Dr. Lloyd Kettner).

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gonococcal arthritis, gonorrheal ophthalmia,¹⁷ seborrheic eczema; antral suppuration, asylum dysentery,¹⁸ the early or acute stage of diabetes¹⁸ and leprosy.¹⁹

From the many reports of the efficacy of manganese in the treatment of various cutaneous diseases, it would appear that its greatest field of usefulness is in the

TABLE 1.—*Patients Treated with Manganese Only*

No.	Diagnosis	No. of Injections	Duration of Disease	Results
1	Furuncle, nose	4	1 mo.	Following the third injection there was no change in the original furuncle and a new furuncle appeared
2	Furunculosis, hands, axillae and face	10	3 wk.	New furuncles continued to form during the entire 10 weeks of treatment
3	Furunculosis, trunk	2	2 mo.	No change after 2 weeks
4	Furunculosis, scalp	10	3 wk.	Absolutely no improvement; new furuncles formed during treatment
5	Furuncle, nose; rosacea	10	6 mo.	No improvement
6	Furunculosis, buttocks; acne vulgaris	10	2 yr.	No change; new furuncles appeared each week; acne not benefited
7	Sycosis vulgaris	6	2 yr.	Worse during treatment, as no local applications were made
8	Acne vulgaris	5	3 yr.	No change
9	Acne vulgaris	8	6 mo.	There was a progression of the acne during treatment and after the 4th and 5th injections a folliculitis appeared on the buttocks
10	Acne vulgaris	10	6 mo.	No change
11	Acne vulgaris	10	3 mo.	No change
12	Acne vulgaris	10	2 yr.	No change
13	Acne vulgaris	2	2 yr.	No change
14	Acne vulgaris	10	1 yr.	No change
15	Acne vulgaris; seborrheic dermatitis	8	1 yr.	No change
16	Pustular acne (mild)	10	2 yr.	No change
17	Pustular acne (severe)	10	4 yr.	Progression of the disease during time of treatment and immediately after
18	Pustular acne (severe)	5	3 yr.	No improvement
19	Pustular acne (severe)	10	1 yr.	No improvement
20	Pustular acne (severe)	10	5 yr.	No improvement; new pustules continued to form during treatment
21	Pustular acne (severe)	6	2 yr.	New pustules each week
22	Pustular acne (severe)	10	4 yr.	Worse after course of treatment; new pustules each week during period of treatment
23	Pustular acne (severe)	10	6 mo.	No effect on pustules; new ones appeared during treatment period
24	Pustular acne (severe)	10	1 yr.	No improvement; new pustules each week
25	Pustular and cystic acne	10	1 yr.	No improvement
26	Pustular and cystic acne	10	2 yr.	No improvement
27	Pustular and keloidal acne	5	1 yr.	No improvement
28	Extensive pustular and keloidal acne	10	5 yr.	No improvement; new pustules each week
29	Acne conglobata	10	4 yr.	Worse after and during treatment; many new pustules

coccigenic cutaneous infections, abscesses, furuncles, pustular acne, acne vulgaris and sycosis vulgaris. An investigation by Oliver and Crawford²⁰ indicates that manganese may have some value. They recommend colloidal manganese hydroxide as a valuable adjuvant in the routine management of furunculosis, acne indurata,

pustular superficial acne, rosacea with pustulation, pustular folliculitis and pyogenic infections of staphylococcal origin. They treated 134 patients who had acne vulgaris. All the patients had had the condition for long periods and had been treated unsuccessfully by other means including roentgen therapy. They were given weekly injections of colloidal manganese hydroxide in from 0.5 to 2 cc. doses and were allowed to use local measures; 67.9 per cent of the patients were said to have been definitely improved. Of twenty-three patients with acne indurata, 73.9 per cent were benefited. With a group of forty-five patients with furunculosis, good results were achieved in 71.1 per cent. Of thirty-one patients with sycosis vulgaris 22.6 per cent showed improvement of the disease. In 54.5 per cent of eleven cases of folliculitis satisfactory improvement was obtained and 62.5 per cent of eight patients with rosacea exhibited an involution of the pustules. Oliver

TABLE 2.—*Patients Treated with Combined Topical and (in Some Cases Roentgen Therapy) Manganese*

No.	Diagnosis	No. of Injections	Duration of Disease	Results
1	Sycosis vulgaris	4	4 mo.	New pustules continued to form
2	Sycosis vulgaris	3	6 mo.	No improvement
3	Sycosis vulgaris	7	6 mo.	No improvement
4	Furunculosis	20	8 yr.	Temporary improvement followed by recurrence of many furuncles during period of treatment
5	Furunculosis	4	7 yr.	Many new furuncles during period of treatment
6	Furunculosis	3	3 wk.	No improvement
7	Acne vulgaris	4	1 yr.	No change
8	Acne vulgaris	4	3 yr.	No change
9	Pustular acne	7	4 yr.	New pustules each week for 7 weeks
10	Pustular acne (mild)	3	10 yr.	No change
11	Pustular acne	10	3 yr.	No change
12	Pustular acne	10	4 yr.	Mild improvement (?) probably due to roentgen therapy
13	Acne conglobata	20	4 mo.	There was marked improvement after 12 roentgen treatments in addition to lotio alba and manganese injections; there was a relapse however 2 months after roentgen treatments had been discontinued
14	Acne conglobata	10	2 yr.	Some improvement after roentgen therapy and manganese (result could well be due to roentgen therapy)

and Crawford stated that although they did not feel capable of judging the part played by this metal in the various functions of the body there was apparently evidence to indicate that it was not an inert element and that any one of the biologic actions occurring when manganese was used in the therapy of acne vulgaris could very well exert a favorable influence on the course of the disease.

In view of Oliver and Crawford's reported high percentage of good results, the drug seemed worthy of clinical trial, especially since no serious ill effects from the clinical use of manganese hydroxide (colloidal) have been recorded. Using the same preparation in the same dosage as employed by these investigators, namely from 0.5 to 2 cc. of colloidal manganese (Crookes), I have treated and observed a group of forty-three patients with acne vulgaris, mainly of the pustular type, folliculitis, sycosis vulgaris and rosacea. Photographs of the majority of patients were taken before and after treatment. Each patient was carefully examined every week. The objective was to give each patient ten weekly injections (tables 1 and 2). Some discontinued treatment before ten injections were given, since no improvement

18. Mulford Colloid Laboratories, Thirty-Eighth and Ludlow streets, Philadelphia, a booklet.

19. The Paul C. Koenig Company, 2036 East 100 Street, Cleveland, distributors of psorimangan, Dr. O. Weil, Chem. pharm. Fabrik, Frankfurt a.M., a pamphlet.

20. Oliver, E. L., and Crawford, G. M.: Manganese Therapy of Furunculosis and Pustular Acne, M. Rec. 143: 154 (Feb. 19) 1936.

or even progression of the lesion was noted by the patient, and further injections were refused. Several patients discontinued treatment because of pain and soreness experienced after the injections. Otherwise no reactions were remarked. The patients were divided into two groups: (1) those who received manganese injections only, with no topical or roentgen therapy,

TABLE 3.—*Psoriasis Treated with Manganese*

No.	Distribution of Lesions	No. of Injections	Duration of Disease	Results
1	Trunk, thigh and elbows	7	3 mo.	No change
2	Trunk, scalp and extremities	20	6 mo.	There was complete involution after the 13th injection, but 4 months later there was a widespread recurrence
3	Extremities and trunk	7	3 mo.	All of the plaques underwent involution after 5th or 6th injection but recurred 2 months later
4	Scalp, face, trunk and extremities	11	6 mo.	New plaques appeared until the 8th injection; the eruption became almost generalized and then underwent involution after the 10th injection; 2 months later there was a widespread recurrence
5	Extremities	2	5 yr.	No change
6	Trunk and extremities	20	18 yr.	Absolutely no change
7	Scalp	7	1 yr.	No change
8	Scalp, trunk and extremities	10	1 yr.	Progression of lesion during treatment
9	Trunk and extremities	11	3 wk.	After the 6th injection the plaques began to regress; all were healed after the 9th injection; there was no recurrence 1 year later

and (2) those who received some topical applications and/or roentgen therapy in addition to the manganese injections. One hundred per cent failure to observe any signs of improvement resulted in the first group, and, after all, is this not the real test of the drug? In the second group two patients with acne conglobata showed slight temporary improvement, but they also had been given suitable roentgen therapy. Therefore there was not one case in which the improvement could be attributed to the use of manganese. No patient voluntarily commented on a sense of well being (the so-called tonic effect) after the injections. Hemoglobin determinations were made in ten cases before and after treatment. There was no appreciable effect.

From several reports²¹ manganese preparations would seem to be useful in the treatment of psoriasis. Niles²² reviewed the literature in regard to the treatment of psoriasis and reported his own experience with seventy-two cases. He concluded that, "while the results are occasionally temporarily good, this treatment is too long, uncertain and potentially dangerous to be considered a valuable aid in the treatment of psoriasis. Only two or three patients were completely cured and so relatively few were definitely benefited that these results may have been due to the softening effect of even the boric acid salve or to a spontaneous remission as

occasionally occurs in this disease. The injections did not appear to prevent recurrences nor delay their appearance; in fact, in some patients new lesions appeared even during treatment. Local therapy was not more effective or rapid during or after injections than before."

In this study a small group of nine patients with psoriasis was treated with colloidal manganese hydroxide by weekly injections in 2 cc. doses (table 3). In only one patient (9) was there any definite and lasting improvement. She has had no recurrence for one year. It should be emphasized that in this case the patient was treated during her first attack of psoriasis, and it is well known that often the initial eruption in psoriasis undergoes spontaneous involution only to recur months or even years later.

SUMMARY AND CONCLUSIONS

1. Based on the actual and presumed properties of manganese and its compounds, many reports of its beneficial action in the treatment of the dermatoses have appeared since its introduction during the World War. Its value is claimed to be great in the treatment of a variety of diseases, notably furunculosis, abscesses, acne vulgaris, sycosis vulgaris and psoriasis.

2. No sound experimental basis supports these claims.

3. In a carefully observed group of forty-three patients with pustular acne, acne vulgaris, furunculosis, rosacea and sycosis vulgaris, and also in a group of nine patients with psoriasis, the results of treatment with a widely advertised, well known and apparently extensively used brand of colloidal manganese hydroxide were unsatisfactory.

21 East Eager Street.

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.
PAUL NICHOLAS LEECH, Secretary.

MANGANESE COMPOUNDS FOR CUTANEOUS DISEASES, COCCOGENIC INFECTIONS AND BLOOD FORMATION NOT ACCEPTABLE FOR NEW AND NONOFFICIAL REMEDIES

Manganese preparations proposed for the treatment of various cutaneous diseases (pustular acne, acne vulgaris, furunculosis, psoriasis, acne rosacea and sycosis vulgaris), cocco-genic infections in general and for favorable effect on blood formation have long been marketed by many pharmaceutical manufacturers. Manganese butyrate 1 per cent solution has been the most universal parenteral preparation marketed for use in the treatment of the pustular dermatoses and deep seated coccic infections. Two firms (Mallinckrodt Chemical Works and Swan-Myers & Co.) submitted such a preparation to the Council fifteen years ago, at which time consideration was postponed for lack of acceptable evidence of its therapeutic usefulness. In all this time there has not been received from either of these two firms, or from any other firm marketing manganese butyrate, the additional evidence required by the Council. Swan-Myers & Co. has now been absorbed by Abbott Laboratories, which market the compound under the name Mangatrate. The following are representative of the variety of proprietary manganese compounds as marketed by several firms for the treatment of cutaneous and cocco-genic diseases: Colomang (formerly Collosol Manganese) (Crookes Laboratories, Inc.), Psorimangan (Paul C. Koenig Company), Mangacol and Mangacol Sol (Mulford Colloid Laboratories), Man-Na-Gluconate (Drug Products Company, Inc.), Manganese Butyrate B. D. H. (Anglo-French Drug Co.,

21. These include:

Oliver, E. L., and Crawford, G. M.: Manganese Therapy for Psoriasis, *Arch. Dermat. & Syph.* 35: 1120 (June) 1937.
Barr, Joseph: Intravenous Manganese in the Treatment of Psoriasis, *J. M. Soc., New Jersey* 32: 376 (June) 1935.
Schmidt, P. W.: Ueber die Behandlung der Psoriasis mit Psorimangan, *München, med. Wchnschr.* 78: 1090 (June 26) 1931.
Richter, Wilhelm: Erfahrungen über neuere Methoden in der Psoriasis Behandlung, *Dermat. Ztschr.* 65: 375 (Feb.) 1933.
Schwarz, F.: Erfahrungen mit einem neuen Antipsoriatikum, *Med. Welt* 22: 782 (May 28) 1932.
22. Niles, H. D.: Treatment of Psoriasis by Colloidal Manganese, *New York State J. Med.* 37: 298 (Feb. 1) 1937.

Inc.), Manganese Butyrate Solution (Mallinckrodt Chemical Works), Manganese Butyrate (the National Drug Company), Manganese Butyrate 1 per cent (U. S. Standard Products Company) and Mangatrate (Abbott Laboratories).

Manganese Butyrate is also marketed in combination with milk proteins for nonspecific protein therapy by many firms under an assortment of proprietary names. In some instances it is claimed that the manganese acts as a specific adjuvant to the "resistance-stimulating" protein. The Council has never recognized any proprietary preparation for nonspecific protein therapy except brands of typhoid vaccine. The sale of manganese alone and in combination with other therapeutic agents is typical of the manner in which manufacturers usually seek to increase their sales. This has also been extended to propagation of the unwarranted claim that manganese exerts a favorable effect on blood formation. Manganese in combination with iron and other substances has been on the market for some time. The Council recently voted to reaffirm its previous attitude that no scientific evidence has been brought forth to show that administration of manganese compounds has a favorable effect on blood formation.

More recently the use of manganese in the treatment of skin diseases has been revived by the promotion of so-called colloidal manganese hydroxide. Two such preparations are marketed under the names Colomang (formerly Collosol Manganese) and Psorimangan. The former is supplied in bottles for oral use as well as ampules for intramuscular injection. This firm (Crookes) claims as good results by the oral as by the injection method of administration, despite the fact that von Oettingen¹ has indicated that absorption of manganese from the gastrointestinal tract is very slow and incomplete. He further states that animals treated with manganese in different ways show first degeneration of the liver and later degenerative changes in various parts of the central nervous system. Since manganese is stored mainly in the liver and kidneys and is eliminated too rapidly to produce more than a temporary rise in the blood level, it is difficult to see the *modus operandi* of parenteral administration for skin disease. Oral doses small enough to avoid gastrointestinal irritation would be relatively inert, whereas repeated parenteral injection imposes the danger of metallic poisoning. Psorimangan is marketed for intravenous as well as intramuscular use and is recommended for psoriasis and furunculosis in doses of from 0.5 to 2 cc. once or twice a week for a total of from twenty to twenty-five injections.

In support of both past and present therapeutic claims of the usefulness of manganese, the firms cite few or no references. For Psorimangan (Koenig) the firm circulates a reprint by Dr. Wilhelm Richter, University Clinic, Berlin (reprinted from the *Dermatologische Zeitschrift* 65:377, 1933), in which it is claimed that "Psorimangan therapy should be designated and accepted as a treasure in modern medicine." Other like extravagant claims are made, one with reference to its equality to chaulmoogra oil or gold in the treatment of leprosy. In none of the firms' references nor in those found in the *Quarterly Cumulative Index Medicus* is there presented conclusive evidence of the therapeutic value of manganese. On the contrary, Sullivan² presents clinical evidence confirming the previous opinion of the Council. He reports that colloidal manganese hydroxide (Crookes) gave unsatisfactory results in the treatment of acne furunculosis, sycosis and psoriasis. The report also confirms the results of Niles³ and renders the previous investigation by Oliver and Crawford⁴ inconclusive. The therapeutic suggestiveness of the name Psorimangan is not only unwarranted but undesirable. The Council questioned whether or not the other proprietary manganese compounds were accurately named or described, since it appears doubtful that manganese hydroxide, as such, can exist

alone as a stable colloid. Twenty years ago the Council reported⁵ that some of the Collosol preparations of the Anglo-French Drug Company were not colloidal solutions at all but suspensions of a coarse powder. Collosol Manganese and all the other "Collosol" metals of this firm were declared ineligible to N. N. R. because of the recklessness of the claims made for the injection of these dangerous precipitate-containing preparations. This same firm now markets a manganese butyrate solution. The therapeutic claims made for any or all of the manganese compounds are unsubstantiated. For this reason the Council finds objectionable all marketed compounds in which the manganese cation appears to be the common denominator.

It is quite generally recognized that manganese and its salts may have important metabolic functions in both plant and animal tissues and may play some significant dietary role in the physiology of growing animals. The present state of this knowledge is such that any therapeutic application of positive valent manganese is unwarranted until conclusive supportive evidence is made available. The significance of excess or deficiency of manganese in the diets of animals does not at present appear to affect the conclusion that the therapeutic use of compounds such as are considered in this report is unwarranted.

The Council voted to adopt the report declaring manganese cation-containing compounds proposed for therapeutic use unacceptable for inclusion in N. N. R. on the basis of inconclusive, inadequate evidence of scientific value.

"NIKETHAMIDE" THE NONPROPRIETARY NAME FOR PYRIDINE-B-CARBOXYLIC ACID DIETHYLAMIDE

In 1929 the Council issued a preliminary report on Coramine-Ciba (pyridine-b-carboxylic acid diethylamide), postponing action to await further experimental and clinical evidence (*THE JOURNAL*, June 1, 1929, p. 1837). In 1937 the Council's office asked Ciba Pharmaceutical Products, Inc., whether or not it intended to resubmit the product with any accumulated evidence. The firm replied that it intended to accomplish a resubmission. The firm later (1938) requested postponement of the date of resubmission to await completion of studies in progress.

Meanwhile, in view of the fact that the patent was to expire with the close of 1939, the Upjohn Company asked the Council to coin a nonproprietary name for the substance, subsequently expressing its intention of submitting the product on its own account. The Council consulted Ciba Pharmaceutical Products, Inc., and agreement was reached on the name "Nikethamide" (pronounced "nik-eth'-amide"). The Council voted to recognize the term as the nonproprietary name for the substance introduced in medicine under the proprietary name of Coramine (Ciba) (pyridine-b-carboxylic acid diethylamide).

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

THIAMIN CHLORIDE-ABBOTT (See *THE JOURNAL*, March 25, 1939, p. 1157).

The following additional dosage forms have been accepted:

Sterile Isotonic Solution Thiamin Chloride-Abbott, 100 mg., 10 cc. *Bottle*: Each cubic centimeter contains thiamin chloride 0.01 Gm. (3,000 international units), sodium chloride 0.0057 Gm. and chlorobutanol (derivative of chloroform) 0.005 Gm. in chemically pure water.

Sterile Solution Thiamin Chloride-Abbott, 250 mg., 5 cc. *Bottle*: Each cubic centimeter contains thiamin chloride 0.05 Gm. (15,000 international units) and chlorobutanol (derivative of chloroform) 0.005 Gm. in chemically pure water.

Tablets Thiamin Chloride-Abbott, 6 mg.: Each tablet contains 2,000 international units of thiamin chloride.

5. Collosol Preparations, J. A. M. A. 72:1694 (June 7) 1919.

1. von Oettingen, W. F.: Manganese: Its Distribution, Pharmacology and Health Hazards, *Physiol. Rev.* 15:175-199 (April) 1935.

2. Sullivan, M.: Manganese Hydroxide in the Treatment of Acne Vulgaris, Pustular Acne, Furunculosis, Sycosis Vulgaris and Psoriasis (see preceding report).

3. Niles, H. D.: Treatment of Psoriasis by Colloidal Manganese, *New York State J. Med.* 37:298 (Feb.) 1937.

4. Oliver, E. L., and Crawford, G. M.: Manganese Therapy of Furunculosis and Pustular Acne, *M. Rec.* 143:154 (Feb. 19) 1936.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 20, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

SUBSCRIPTION AND FELLOWSHIP DUES

Those who have not paid their 1940 Fellowship dues are reminded that a colored remittance slip was inserted in last week's issue of THE JOURNAL. It served as an invoice so that the expense of sending personal bills might be avoided. Those who have already remitted should naturally disregard the slip. However, those who have not yet paid the 1940 dues will find it a convenient method of remitting. The slip is cut to form an envelop when folded and sealed, and requires no postage. It can readily be found in last week's copy of THE JOURNAL.

Included on the slip is a list of other periodicals published by the Association. Subscriptions to any of these special journals or to *Hygieia*, the Health Magazine, can be conveniently included with remittance for Fellowship or THE JOURNAL subscription.

THE PRESIDENT'S PLAN FOR FEDERAL HOSPITALS

On invitation of President Franklin Delano Roosevelt, the committee appointed by the House of Delegates of the American Medical Association to confer with federal representatives relative to the proposed National Health Program visited the White House in Washington to discuss the plan for the construction of hospitals with federal funds, first suggested by the President December 21. Representing the American Medical Association on this occasion were the chairman of this committee, Dr. Irvin Abell, and as members Drs. Walter F. Donaldson, Frederic Sondern, Walter E. Vest, Fred W. Rankin and Edward H. Cary and Dr. Austin A. Hayden, appointed by the Speaker of the House to take the place of Dr. Henry Luce, who was ill and unable to attend. Also in attendance to represent the Association were Drs. Olin West, secretary; R. G. Leland, of the Bureau of Medical Economics, and W. D. Cutter, of the Council on Medical Education and Hospitals. At the same time there were in attendance representatives of the American, Catholic and Protestant hospital associations, including Monsignor Griffin, Father Schmittalla, Fred Carter, Dr. Bert W. Caldwell and Rev. Paul R. Zwilling. Included also at the conference were Surgeon General Thomas Parran and Dr. Joseph Mountin, of the U. S. Public Health Service, and Surgeon General Ross T. McIntire, of the Naval Medical Corps.

It is reported that the President indicated again his belief that it is not desirable to enact a program with the cumbersome and expensive aspects of the National Health Program or the Wagner Health Bill, S. 1620, and also that he indicated his belief that the technique of grants-in-aid with matching appropriations might not serve to be helpful to the very areas most requiring assistance. Furthermore, it was the President's proposal that the federal government should erect the necessary hospitals but that the requests should come from the areas needing the hospitals and that they should be locally supported and administered. The President also emphasized the experimental and necessarily limited character of this program.

Previous to the conference with the President, the representatives of the medical profession and of the hospitals in attendance had conferred and prepared a memorandum on the situation, which was left with the President. This memorandum follows:

1. Hospitals to be built only where need for same can be shown. Advisory consultation in the determination of such need to be given by the state medical and hospital associations, the state health department and the county judges or officials of the counties in which such hospital services are proposed.

2. Size of hospital to be commensurate with the needs of the community and the ability of the latter to support it.

3. Means for the maintenance and upkeep of such hospitals rank in importance equal to that of construction.

4. Since the important objective of the program is the service it can render, hospital construction and administration, equipment, staff and personnel should meet the standards which the American Medical Association, the American College of Surgeons and the hospital associations regard as minimal for rendering such service in the various localities. Where needed, since highly specialized facilities and personnel cannot be made available in all places, affiliation with larger hospitals or hospital centers to be had to the end that highly specialized services, diagnostic and therapeutic, be made available to all.

5. Maintenance of a standard of professional and hospital service that will keep it efficient and prove attractive to qualified men and women as a career.

6. Utilization of existing facilities where possible: Under no circumstances should the program be allowed to develop into competition with the voluntary hospitals but should rather foster cooperation between the two groups.

7. Many small communities can be better served by the utilization of bed vacancies in available existing institutions than by the construction of new hospitals, transportation and per diem expense to be borne by state and/or county funds. Where state and/or county funds cannot be provided, expense to be met by, and to be dispensed by, local agencies.

Ambulance service and good roads will permit this type of service to operate safely, efficiently and economically in communities not financially able to support a hospital.

LIPOID PNEUMONIA

In 1925 Laughlen,¹ of Toronto, described four cases of bronchopneumonia in infants with an unusual microscopic picture. In addition to the usual polymorphonuclear leukocytic exudate, an exudate was present consisting almost exclusively of large vacuolated mononuclear cells containing unstained droplets of various sizes. By the use of sudan III stain these globules were demonstrated to be oil. Laughlen saw a similar condition in a man of 37 with paralysis of the vocal cords. This patient was given 1½ ounces (45 cc.) of liquid petrolatum three times a day for four and one-half months as a laxative. At necropsy a condition similar to that in the preceding four cases was present in his lungs. In all of Laughlen's five cases there was a history of "oil treatment." In three menthol in liquid petrolatum was administered in intranasal drops and in two liquid petrolatum was given as a laxative.

Laughlen demonstrated in animal experiments that oil finds its way into the alveoli of the lung not only when directly introduced into the trachea but also at times when administered in sufficient quantities in the nose and throat. He found that oil when present in the lung is actively phagocytosed by the endothelial cells, which come to fill the alveoli and eventually cause consolidation of lung tissue. He believed that oil, by lowering the resistance of the tissue or by carrying infection from the nose and throat, may be a factor in the production of pneumonia.

Pinkerton² in 1927 reported six instances of oil aspiration in infants. A positive history of the use of fairly large quantities of some fatty or oily substance was present in all. The reaction on the part of the lung was identical with that described by Laughlen. There was an outpouring of macrophages laden with oil droplets, with subsequent formation of giant cells and fibrosis. The cases ranged from one which showed the earliest reaction (large, oil-laden mononuclears in the alveoli only) to one which showed nodular fibrosis suggesting, on gross examination, tumor formation. Pinkerton demonstrated in animal experiments that (1) animal, mineral and vegetable oils injected intratracheally disappear slowly from the lung, requiring a period of several months for complete removal; (2) in the absence of infection, the simple, neutral vegetable oils (iodized sesame, poppyseed oil and olive oil) practically do not produce any reaction; (3) animal oils (milk fat, rabbit fat, cod liver oil and lard oil) cause marked fibrosis and giant cell formation in the lung in a few days, and (4) liquid petrolatum is quickly emulsified and taken up by phagocytic cells in the alveoli with resulting consolidation of the lung. Liquid petrolatum is a pure hydrocarbon, incapable of undergoing hydrolysis. It is apparently irritating enough to evoke a tremendous cellular reaction. According to Pinkerton it can be readily identified by the simple histochemical procedure of fixing or staining the suspected tissue with osmic acid. Since the oil readily dissolves sudan IV and does not reduce osmic acid, as vegetable and animal oils do, it can be detected even when other lipids are present.

Cannon and Walsh³ demonstrated in rabbits that the intranasal administration of oil, as well as of watery solutions of tannic acid, zinc sulfate and sodium sulfate, caused edema, necrosis, hemorrhage and focal bronchopneumonia. These effects were more severe when the antiseptic solutions were put into the noses of rabbits with snuffles or were mixed with living bacteria isolated from the noses of rabbits with snuffles. They stressed the dangers of intranasal medication by pointing out that it is frequently used in the treatment of

2. Pinkerton, Henry: The Reaction to Oils and Fats in the Lung, *Arch. Path.* 5: 380 (March) 1928.

1. Laughlen, G. F.: Studies on Pneumonia Following Nasopharyngeal Injection of Oil, *Am. J. Path.* 1: 407 (July) 1925.

3. Cannon, P. R., and Walsh, T. E.: Lipoid Pneumonia and Some Potential Dangers of Intranasal Medication, *Internat. Clin.* 3: 109 (Sept.) 1938.

acute infections of the upper respiratory tract and that the oils in passing down into the lungs are likely to carry the offending micro-organisms with them. Thus the possibility of involuntary aspiration of a part of oil sprayed or dropped into the upper passages without exciting the reflex closure of the glottis was clearly demonstrated by the experiments of Laughlen, Ikeda, and Cannon and Walsh. The aspiration is probably facilitated by the mildly anesthetic effect of such drugs as menthol and thymol.

Goodwin's⁴ report of twenty-five cases of "lipoid cell pneumonia" in infants and young children called the attention of pediatricians to the frequency of this type of aspiration pneumonia,⁵ particularly in debilitated infants and in those with impaired deglutition due to some neurologic disorder. The clinical record of forced feeding, regurgitation of ingested oil and the use of intranasal instillation of oil indicate the mode of aspiration of oil into the lung in these cases of bronchopneumonia.

As a result of the isolated reports of lipoid pneumonia in adults by Laughlen, Fischer-Wasels, Ellinger, Meursing, Davis and others, this peculiar form of pneumonia is not considered a rare occurrence among older persons. Thus, in a total of 106 cases collected by Ikeda⁶ from the literature up to 1936 there were thirty-eight cases, including five of his own, of "lipoid" pneumonia in adults, and at necropsies at Bellevue Hospital between 1934 and 1938 Graef⁷ encountered nine out of a total of twenty-two. Ikeda considered lipoid pneumonia of adults a distinct clinicopathologic entity which occurs in older persons and is characterized by slow evolution with recurrent bronchopulmonary symptoms. The pulmonary lesion is one of a chronic nonspecific, non-suppurative granulomatous foreign body reaction terminating in fibrosis and tumefaction—a paraffinoma of the lung. Liquid petrolatum and its many medicated combinations constitute the chief etiologic factor (thirty-seven out of thirty-eight cases). The oil may be taken orally or intranasally. More frequently it is self administered, often habitually over a period of years, being dropped or sprayed into the upper respiratory passages.

There is unanimity of opinion among investigators as to the dangers of intranasal medication with oils, particularly as is seen in the uncontrolled use by the public of the various preparations of liquid petrolatum. These dangers have been stressed in editorials in *THE JOURNAL*. The season of colds now at hand and the incessant bombardment over the radio extolling certain preparations for intranasal medication justify reiteration.

4. Goodwin, R. C.: Lipoid Cell Pneumonia, *Am. J. Dis. Child.* 48: 309 (Aug.) 1934.

5. The term "lipoid" is not a very successful one, since it has reference to saponifiable fats only.

6. Ikeda, Kano: Lipoid Pneumonia of the Adult Type (Paraffinoma of the Lung), *Arch. Path.* 23: 470 (April) 1937.

7. Graef, Irving: Studies in Lipid Pneumonia, *Arch. Path.* 28: 613 (Nov.) 1939.

Current Comment

ACCURACY IN MEDICAL NEWS

Only those closely associated with modern trends in publication are familiar with the vast improvement that has been taking place relative to the publication of news of scientific advances. A bulletin recently issued by the United Press to its bureau managers and division managers is worthy of quotation. It reads:

It seems advisable to restate our traditional policy concerning handling stories of "cures" or other medical developments.

This policy, which dates back more than twenty years, is never to call anything a cure, or in fact give any publicity to any remedy of any description, without a thorough investigation.

This rule is now being strengthened by the following:

Under no circumstances put any story on the leased wire about a remedy. If the bureau manager is convinced that the story has merit, he should overhead it to New York for investigation and consideration there.

HEALTH CONDITIONS IN GERMANY

Neither compulsory sickness insurance nor the totalitarian state, with all its widely advertised health movements, has apparently been able to maintain the health of the German people. The *Reader's Digest* contains an abstract of a forthcoming book, "Heil Hunger!" by Dr. Martin Gumpert,¹ formerly head of the Berlin City Dispensary for Deformity Diseases, which indicates that there has been a decided decline in recent years in nearly all phases of German health. The number of cases of scarlet fever and diphtheria have increased from 30 to 50 per cent since 1933. The present death rate from diphtheria is now more than four times that in the United States. Lack of essential vitamin containing foods appears to have caused an alarming increase in rickets and has resulted in a frightful prevalence of foot deformities. The extension of the working day accounts in part for an increase of more than 20 per cent of sickness recorded under insurance between 1933 and 1936, so that in the latter year the recorded morbidity for German workers was three times as great as in the entire American population. In 1938 the average German worker was ill more than fourteen days during the year. While tuberculosis is on the decrease in every other country, Dr. Gumpert alleges that official statistics, from which he takes all his statements, show a considerable increase of this disease in Germany in recent years. Diseases due to bad food are particularly prevalent. This is explained as in part due to the decrease in the consumption of meat, fats, eggs and potatoes and the use of substitutes. Since the establishment of the Nazi state there have been nearly three times as many suicides to 10,000 of population as in the United States. The death rate has increased in almost every age group. The increase has been most rapid in the working years. In the meantime the required period of medical study has been reduced by two years, and quacks and nature healers have been encouraged. In 1935 and 1936, 25 per cent of the men called up for service were rejected, and in 1938 only 55 per cent were accepted.

1. *Health Under Hitler*, condensed from *Heil Hunger! Reader's Digest* 35: 19 (Dec.) 1939.

ORGANIZATION SECTION

A PLAN TO PROVIDE MEDICAL CARE FOR PERSONS ON RELIEF

SCOTT LORD SMITH, M.D.
POUGHKEEPSIE, N. Y.

This plan, which has been in use in Dutchess County, N. Y., for four years, is made possible by a gentlemen's agreement between the county medical society and the welfare departments of Dutchess County and the city of Poughkeepsie. It is not the outcome of a critical survey of the county's resources and needs but has resulted directly from the necessity of furnishing medical care to relief clients and the inability of the individual doctor to provide this care without some remuneration and the demand of the taxpayer to keep as low, as consistent with adequate medical care, the costs to the community.

Dutchess County is a farming and residential, or distant suburban, community of 806 square miles and a population of 105,000. It contains two cities of 45,000 and 12,000 and twenty townships. Its hospital facilities are sufficient and well distributed and readily accessible through a network of good roads. In it practice eighty-seven physicians and surgeons in the cities and forty-six in the villages of twenty townships.

ORGANIZATION OF THE PLAN

The county society agrees:

1. To accept the rates of remuneration for physicians and other regulations as prescribed by the New York State Welfare Department under the State Welfare Law.
2. To elect a committee to meet each month with the welfare commissioner to adjust physicians' bills and any problems arising from the medical care of the indigent.
3. That, if the funds set up for the purpose by the county are insufficient in any month to meet the total of physicians' bills, each participating doctor will accept the necessary pro rata cut in his bill against the county.

The Welfare Department agrees:

1. To provide in its budget a fixed sum per month for each "case unit" on relief.
2. To accept the services of any qualified resident physician who is willing to work under the conditions prescribed jointly by the county medical society, the local welfare department and the state welfare department.
3. To allow the relief client free choice of any physician from this panel, as already described.

WORKING OF THE PLAN IN ACTUAL PRACTICE

On the basis of estimates by the state welfare department and by a Michigan county medical society which organized its own relief work, one dollar monthly per case unit on relief was selected as a basic rate for providing county funds. After a brief trial this estimate was found insufficient and has been raised in successive steps to \$1.25 for the seven summer months and \$1.40 for the five remaining months. With rigorous adherence to both the letter and the spirit of the agreement, under constant scrutiny of the county society's welfare committee, these two rates have provided the necessary total funds. It is this committee, and it alone, that makes successful operation of the plan possible. To serve on it one must possess public spirit and a desire to further the best interests of medicine, in addition to energy, tact and patience.

In 1930 New York State superseded its old "Poor Law" with the present "Welfare Law." Prior to that year each township and city employed a doctor at a small yearly stipend to care for its sick poor. To be eligible for such care a person must have been accepted by the poormaster as indigent. This community responsibility the Welfare Law broadened to include all persons unable to provide adequate medical care for themselves. While the full import of this provision has never been accepted by the several welfare commissioners, there was created a vastly increased volume of medical work for payment of which the individual welfare district became responsible. Since the law permits each welfare commissioner to make what arrangements he pleases for the care of his relief clients, ranging from the unsupervised fee system to the employment of a full time salaried physician, only the fact that state reimbursement to his district is contingent on the state welfare commissioner's approval of his plan acts as a deterrent to possible insufficient care.

The general unemployment of the middle 1930's completed the picture. As a result, in the city of Poughkeepsie 5,000 persons on relief became theoretically under the care of a single part time physician on a \$1,200 a year salary. Actually the work was thrown on those doctors in whose practice the relief clients had been in many cases producing an insupportable financial burden. In the county welfare district the unsupervised "fee system" took the place of the part time salaried "poor physician." Two years' trial of this plan proved so expensive that the county board of supervisors demanded a change. In response to its demand, coupled with the equally urgent need to reimburse the doctors in the city district, the plan described was formulated by joint agreement between the two welfare districts and the county medical society.

CONCLUSIONS

The plan described has given general satisfaction during the four years of its operation in Dutchess County, in that it has:

1. Provided relief clients with free choice of physicians.
2. Provided the doctor with reasonable remuneration for his care of relief clients.
3. Provided this care at reasonable cost to the taxpayer.
4. Demonstrated that a county medical society and a welfare department can cooperate to give satisfactory medical relief care.
5. Demonstrated the willingness and capacity of a medical society to regulate the professional activities of its members when such regulation is essential in the interests of the membership in general.
6. Demonstrated the capacity of the individual physician to do his part in meeting the social problems of the time.

113 Academy Street.

THE PHYSICIAN'S FEDERAL INCOME TAX—1940

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION

The Revenue Act of 1939 effected no change in the federal income tax laws of particular interest to physicians, as such. Another law, however, the Public Salary Tax Act of 1939, will subject to the federal income tax laws the income derived from personal services rendered by a physician as an officer or employee of a state, political subdivision, or any agency or instrumentality of either. Heretofore such income has been considered nontaxable under the federal income tax laws if received for services rendered in carrying out a governmental function. Furthermore, the federal government consented to the taxation by states or local taxing authorities of compensation received after Dec. 31, 1938 for personal service as an officer or employee of the United States, any territory or possession or political subdivision, the District of Columbia or any agency or instrumentality of any one or more of the foregoing, if such taxation does not discriminate against such officer or employee because of the source of such compensation. This act, in effect, does away with the immunity from federal income taxes heretofore accorded employees of states, their political subdivisions, agencies or instrumentalities and the immunity from state and local taxes of the income received by federal officers or employees.

Every one who is required to make a federal income tax return must do so on or before March 15, unless an extension of time for filing his return has been granted. For cause shown, the collector of internal revenue for the district in which the taxpayer files his return may grant such an extension, on application filed with him by the taxpayer. This application must state fully the causes for the delay. Failure to make a return may subject the taxpayer to a penalty of 25 per cent of the amount of the tax due.

The normal rate of tax on residents of the United States and on all citizens of the United States regardless of their places of residence is 4 per cent on net income in excess of the exemptions and credits.

WHO MUST FILE RETURNS

1. If gross income was less than \$5,000 during 1939, a return must be filed (a) by every unmarried person, and by every married person not living with her husband or his wife, whose net income was \$1,000 or more, and (b) by every married person living with her husband or his wife, whose net income was \$2,500 or more. If the aggregate net income of husband and wife, living together, was \$2,500 or more, each may make a return or the two may unite in a joint return.

2. Returns must be filed by every person whose gross income in 1939 was \$5,000 or more, regardless of the amount of his net income and of his marital status. If the aggregate gross income of husband and wife, living together, was \$5,000 or more, they must file either a joint return or separate returns, regardless of the amounts of their joint or individual net incomes.

If the status of a taxpayer, so far as it affects the personal exemption or credit for dependents, changed during the year, the personal exemption and credit must be apportioned, under rules and regulations prescribed by the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury, in accordance with the number of months before and after such change. For the purpose of such apportionment

a fractional part of a month should be disregarded unless it amounts to more than half a month, in which case it is to be considered as a month.

As a matter of courtesy only, blanks for returns are sent to taxpayers by the collectors of internal revenue, without request. Failure to receive a blank does not excuse any one from making a return; the taxpayer should obtain the necessary blank from the local collector of internal revenue.

The following discussion covers only matters relating specifically to physicians. Full information concerning questions of general interest may be obtained from the official return blank and from the collectors of internal revenue.

GROSS AND NET INCOMES: WHAT THEY ARE

Gross Income.—A physician's gross income is the total amount of money received by him during the year for professional services, regardless of the time when the services were rendered for which the money was paid, plus such money as he has received as profits from investments and speculation and as compensation and profits from other sources.

Net Income.—Certain professional expenses and the expenses of carrying on any enterprise in which the physician may be engaged for gain may be subtracted as "deductions" from the gross income, to determine the net income on which the tax is to be paid. An "exemption" is allowed, the amount depending on the taxpayer's marital status during the tax year as stated before. These matters are fully covered in the instructions on the tax return blanks.

Earned Income.—In computing the normal tax, but not the surtax, there may be subtracted from net income from all sources an amount equal to 10 per cent of the earned net income, except that the amount so subtracted shall in no case exceed 10 per cent of the net income from all sources. Earned income means professional fees, salaries and wages received as compensation for personal services, as distinguished from receipts from other sources.

The first \$3,000 of a physician's net income from all sources may be regarded under the law as earned net income, whether it was or was not in fact earned within the meaning set forth in the preceding paragraph. Net income in excess of \$3,000 may not be claimed as earned unless it in fact comes within that category. No physician may claim as earned net income any income in excess of \$14,000.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The taxpayer should make no claim for the deduction of expenses unless he is prepared to prove the expenditure by competent evidence. So far as practicable, accurate itemized records should be kept of expenses and substantiating evidence should be carefully preserved. The following statement shows what such deductible expenses are and how they are to be computed:

Office Rent.—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental

fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in his dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

Office Maintenance.—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants, are deductible.

Supplies.—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs and chemicals. Professional journals may be classified as supplies and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment, "the useful life of which is short," generally less than one year, may be deducted; but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment.—Equipment comprises property of a more or less permanent nature. It may ultimately wear out, deteriorate or become obsolete, but it is not in the ordinary sense of the word "consumed in the using."

The cost of equipment, such as has been described, for professional use, cannot be deducted as expense in the year acquired. Examples of this class of property are automobiles, office furniture, medical, surgical and laboratory equipment of more or less permanent nature, and instruments and appliances constituting a part of the physician's professional outfit, to be used over a considerable period of time, generally over one year. Books of more or less permanent nature are regarded as equipment and the purchase price is therefore not deductible.

Although the cost of such equipment is not deductible in the year acquired, nevertheless it may be recovered through depreciation reductions taken year by year over its useful life, as described later.

No hard and fast rule can be laid down as to what part of the cost of equipment is deductible each year as depreciation. The amount depends to some extent on the nature of the property and on the extent and character of its use. The length of its useful life should be the primary consideration. The most that can be done is to suggest certain average or normal rates of depreciation for each of several classes of articles and to leave to the taxpayer the modification of the suggested rates as the circumstances of his particular case may dictate. As fair, normal or average rates of depreciation, the following have been suggested: automobiles, 25 per cent a year; ordinary medical libraries, x-ray equipment, physical therapy equipment, electrical sterilizers, surgical instruments and diagnostic apparatus, 10 per cent a year; office furniture, 5 per cent a year.

The principle governing the determination of all rates of depreciation is that the total amount claimed by the taxpayer as depreciation during the life of the article, plus the salvage value of the article at the end of its useful life, shall not be greater than its purchase price or, if purchased before March 1913, either its fair market value as of that date or its original cost, whichever may be greater. The physician must in

good faith use his best judgment and claim only such allowance for depreciation as the facts justify. The estimate of useful life, on which the rate of depreciation is based, should be carefully considered in his individual case.

In a Treasury Decision, approved Feb. 28, 1934, No. 4422, it was held, among other things, that:

1. The cost to be recovered shall be charged off over the useful life of the property.

2. The reasonableness of any claim for depreciation shall be determined on the conditions known to exist at the end of the period for which the return was made.

3. Where the cost or other basis of the property has been recovered through depreciation or other allowances, no further deduction for depreciation shall be allowed.

4. The burden of proof will rest on the taxpayer to sustain the deduction claimed.

5. The deduction for depreciation in respect to any depreciable property for any taxable year shall be limited to such ratable amount as may reasonably be considered necessary to recover during the remaining life of the property the unrecovered cost or other basis.

Particular attention is called to the last of the foregoing provisions. If, in prior years, rates have been claimed which, if continued, will fully depreciate the cost, less salvage, before the end of its useful life, based on conditions now known, a reestimate of the remaining useful life should now be made and the portion of the cost that had not been depreciated at the beginning of the year 1939 (for a return for the year 1939) should be spread over this reestimated life.

Medical Dues.—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

Postgraduate Study.—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses.—Traveling expenses, including amounts paid for transportation, meals and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

Automobiles.—Payment for an automobile is a payment for permanent equipment and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeurs' wages, and the like.

Deductible loss through depreciation of an automobile is the actual diminution in value resulting from obsolescence and use and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is in the possession of the present taxpayer.

If an automobile is used for professional and also for personal purposes—as when used by the physician partly for recreation, or so used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct

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depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood.
What has been said in respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

MISCELLANEOUS

Contributions to Charitable Organizations.—For detailed information with respect to the deductibility of charitable contributions generally, physicians should consult the official return blank or obtain information from the collectors of internal revenue or from other reliable sources. A physician may not, however, deduct as a charitable contribution the value of services rendered an organization operated for charitable purposes.

Social Security Taxes.—The excise taxes imposed on employers by section 804, title VIII, and section 901, title IX, of the Social Security Act, commonly referred to as old age and unemployment benefit taxes, are deductible annually by employers in computing net income for federal income tax purposes. If the taxpayer's return is made on a cash basis, as are the returns of practically all physicians, the taxes are deductible for the year in which they are actually paid. If the return is made on an accrual basis, the taxes are deductible for the year in which they accrue, irrespective of when they are actually paid. Employees, including physicians whose employment brings them within that category, may not deduct the tax imposed on them by section 801, title VIII, of the Social Security Act, generally referred to as the old age benefits tax. If, however, the employer assumes payment of the employee's tax and does not withhold the amount of the tax so assumed may be deducted by the employer, not as a tax paid but as an ordinary business expense.

Laboratory Expenses.—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire or Other Causes.—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense and is deductible, provided evidence of such loss (damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums.—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included an automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits.—Expense incurred in the defense of a suit for malpractice is deductible as a business expense.

Sale of Spectacles.—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold. Entries on the physician's account books should in such cases show charges for services separate and apart from charges for spectacles, etc.

THE ROLE OF STATE MEDICAL JOURNALS IN ORGANIZED MEDICINE

SAMUEL J. KOPETZKY, M.D.
Editor, New York Medical Week
NEW YORK

I know of no peculiar attributes or personal experiences which entitle me to talk to you—my colleagues—with great authority on the subject to which I am called on to respond. I must therefore assume that it is due to my maturity and the experience I have gained in more than eighteen years in the editorship of the *New York Medical Week*. The sole revenge that maturity can take on the rest of you—all editors and secretaries of medical societies—is to preach at you. I have been the victim of innumerable postprandial addresses: I should have mercy in my heart. The after dinner speech is an American vice, which surely ought not to be unduly encouraged.

However, we are met on a suitable occasion. I shall mix mercy with justice and, if possible, add what I can of wisdom. I shall attempt to be reasonably brief.

We are all interested in state medical journals; we are representatives of the editorial group and as such are presumed effectively to function as editors. What is an editor? One who edits; one who oversees the selection, preparation and the arrangement of material for publication; one who prepares for use or publication by reviewing, compiling, collecting and correcting; one who has been charged with the responsibility of a department of a newspaper or publication; one who writes editorials. Here tonight we are

less concerned with these routine duties—we take them in our stride and either competently or indifferently "carry on."

What constitutes an editorial? This is an article in a journal or publication presumably written by the editor or his subordinate and published as an official argument or expression of opinion. It is on this aspect of editorship that I want to concentrate your thoughts and evoke your reactions. The success of a journal or publication is not based so much on its informative articles—although they too are important—as it is on the editorial expression of opinion. The articles are of use to the medical profession by reason of their novelty, their ingenuity or their report of completed research, as well as because of the interest which recorded laboratory data and clinical bedside observations hold for the average run of the medical journal reading public. But only that medical publication reaches distinction, attains prestige and wields influence whose editorial pages make it a journal of opinion. Where you find a great medical journal of opinion, there you invariably find that the printed page reaches the light through the shadows cast on it by a competent editor. An editor is as great as his ability to bring to his readers those facts and opinions which they had but were unable clearly to express. In presenting to them their thoughts anew an editor is great if he can bring them back to his reader in an angle which will cause him to fall into line with the policies of the publication. When done with skill, this may frequently cause the reader to do "an about face."

Read before the Dinner Meeting of Editors of State Medical Journals at the Annual Conference of Secretaries of Constituent State Medical Associations, Chicago, Nov. 17, 1939.

Among us who are editors of journals, in the interlocking chain of constituent bodies of this great American Medical Association, the editorial message naturally must be based on adopted policy of the organizations we serve. The editor must be anonymous. If his editorial is not unsigned and anonymous, it becomes the opinion only of the one who signed it and, when quoted, it is quoted as his opinion. It is a fundamental formula in democratically controlled and run organizations that the association—the aggregate of its members—and their voice are more important and of higher value than that of any one officer or individual within the organization. So too with our publications, the journal itself is greater than any of its editors, and it—the journal—must express itself and it must not express or enhance the editorial writer. If perchance what the editorial page says is good, rings true and carries a potent message, then the journal should be credited, and the journal is quoted and attains prestige.

A real editor—one who knows, lives and feels the worth of his job—rejoices in the glorious anonymity which good editorial writing implies. An editor is presumed to know thoroughly the topic on which he writes. So comprehensive should be his grasp that he should be able to deliver his message in a few pungent paragraphs. It is a truism that the better the mastery of any topic, the less will be the number of words necessary to tell its story. Thus the editorial becomes distinguished and differentiated from an article written on the same topic. Reiteration is the essence of teaching. Hence it is within the realm of good editorship to repeat in different form-patterns of words the same message over and over again. Truths held sacred, traditions hallowed by time and usage, and policy which is being stressed—these lose nothing in being retold and reemphasized. Every truth and every policy has many facets. One aspect and one elemental factor should be the backbone of each repetition of the editorial comment. As an example in point: Recently the President-Elect, Dr. Nathan B. Van Etten, in his address before the Pittsburgh Academy of Medicine, said, in speaking on *The American Way*, "The best program for medicine should be the product of the best minds of the American people. I propose that it be written by physicians and when approved by organized medicine that it be submitted to the Congress. I believe that we should try to find an American way—built on the sound foundations of American experience." This we, in New York, will put on our masthead and keep it there during succeeding issues. Editorially we shall reiterate the message this masthead contains, in our endeavor to make it reach the value of a household word.

An editor must be entirely untrammelled and free to express himself. This freedom should range far and wide but not extend beyond the framework of adopted policy. Intramural groups and political blocs must never be favored, one above the other. They all must be tolerated. All must have the editor's sympathetic ear, but no one must control his potent pen. His office must never be used as an intramural stepping stone for the almost unavoidable political groupings and ambitious aspirations of one sector of the membership over that of another, since the whole membership is actually the editor's collective employer. He serves all of them best when he remains an observer, somewhat aloof, intensely sympathetic and yet always beyond intramural politics. Policies are greater than people, and problems always outweigh parties.

Happy indeed is the editor of a state journal who successfully attains such a position among his fellow members. He must beware lest he be lured by the siren voice of intramural pressure groups who have a vested intellectual and evangelistic interest in some form of public health education propaganda. I am referring to very worthy groups among us, as for example groups interested in the blind, in the deafened and in the control of cancer and of tuberculosis. Such groups send to the public their own particular messages. The editor of our state journal, having won the confidence of his readers, serves them as a guide and must stand between the strenuous special pleaders from these groups and the general run of the profession. In no case should the editor become one of the special pleaders.

The editor must defend traditional policies of the profession against the general public, which often clamors for hasty and unwise change. The editor must know that there are always

those who delight in tagging themselves with the label of "progressive" because of an inherent restless desire to bring about change. It remains to be seen whether or not the change is really a progression. At the same time the editorial must be so employed that it must lead the profession itself away from its inbred aversion to any change. The editor must be a courageous leader, and editorially our state journals must stress an appreciation of new situations and new methods to meet them. The age we live in is one of fast movement. The editor must sense the trends of the time in which he is living and must present the trends of his day so that our readers, first the medical profession and secondly the public it serves, will appreciate the changes taking place about us and be prepared mentally by an intelligent awareness of the current situation and thus be able to build new methods and evolve new technics to meet the changing trends of the day. All this must be within the framework of sound proposals and adopted policies.

The end to be achieved by the medical editor goes further than merely to educate both public and profession for cooperation on accepted policies only. He must prepare groundwork, pave new highways, light up darkened avenues of thought for the appreciation of needs for change in policy and in the development of policy. He must do this even though some of these changes are generally felt to be unpopular with the profession at the given moment.

The medical editor should avoid the use of generalities to help him win his fights. Facts and figures are always the best arguments, and the editor himself should never be fooled by generalities and slogans. Slogans are the verbal anesthetics which lull intelligent apprehension of factual data into discards. Most slogans are actually trite phrases framed to nullify the necessity for thinking. They are put forward in the effort to have the casual reader substitute them for conclusions arrived at by deductive reasoning. The editor himself must scrupulously avoid employing slogans. If worthy of the editorial pen he wields, his readers have a right to expect better things than that from him. The medical editor naturally must be a student of medical affairs. His studies should be almost wholly objective; he should carefully examine every proposal no matter how fallacious or fantastic it may seem. There may be some germ of good in it somewhere, and if such is found that little good, no matter how small, should be conserved for incorporation in editorial policy. Our constant effort is to bring comprehension of better methods and technics to the profession so that the public welfare is better served.

The editor is the paramount factor in bringing the general public and the medical profession into close copartnership in the endeavor to maintain high standards of medical practice and a high level of public health. Organized medicine needs no subterfuge in exchanging views with the public or in telling the public its stand on current moot questions. The public, represented by its general newspapers and government agencies concerned with public health, is bound to listen to organized medicine speaking in the name of its 115,000 physicians, through *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* and our state journals. If we as editors thoroughly understand our jobs and conscientiously perform our duties, mutual confidence will soon become the established order. Organized medicine can speak publicly through our columns in a voice that will be heard and heeded. Organized medicine needs no camouflaged pressure group to lead its fights toward better medicine and higher grades of medical care or even to popularize the development of its technics for delivering medical care to the indigent and the near indigent, who are separated from receiving such care by financial barriers. Organized medicine, free and unafraid and "in the open," can advocate its own considered judgments on such questions.

But organized medicine must clearly define its medical policy. No body of men, however expert as publicists, can sell "nebulae." We may be told that a nebula consists of an aggregation of exceedingly bright stars, but it takes an expert astronomer and a strong telescope to see even one. You cannot beat a horse with no horse. Our national health policy must be stated plainly; our goal must be set so clearly that all who run may read. It must be broad enough to cover the general medical needs of the whole country and flexible enough to fit every

conceivable local situation. This, of course, is in the hands of the policy forming groups in our organizations, and I am sure that they are endeavoring to complete their designated tasks.

The program handed us this morning, the result of the action yesterday of the Board of Trustees, is a step in this direction. I look on it as a fine beginning, the outline of a basic formula for a national health policy which we can back, and which the leadership of the American Medical Association will develop further. I trust to see an endeavor to translate it into enabling legislation so that our states and our state organizations can act under it and make it effective. We as editors, however, definitely need this outlined policy as the framework within which lies our field of endeavor. Our efforts henceforth should be to popularize it and let every one know our progressive stand.

There should be a paralleling activity on the part of all editors of state medical journals. I am not implying that the editorial impetus along a given line shall come from a central source. But have we not all exactly similar aims? Are not the goals of our endeavors the same? This is true whether we are editors of the journal in Maine or in California, Texas or Illinois. I would that it were possible for each of us to have a preview of what our confrères and colleagues intend to publish, so that each of us might be able to parallel the other. Progress most rapidly follows an intelligent objective discussion and differences of opinion, honestly held but dispassionately expressed. Among us every proposition is debatable within the realm of good taste and the necessary observances of the decencies.

Knowing the policies adopted by organized medicine to meet the changing needs of our times and having foreknowledge of the thoughts of our editorial colleagues in the constituent journals, I feel that we shall be better able to serve organized medicine and more properly fill the role which it is intended that we shall play in the integration of our joint editorial policies; namely, to express the official opinion of organized medicine. All this to the end that American Medicine shall better serve our people.

DISCUSSION

CHAIRMAN DRAKE: This fine address brings up a number of questions. I think the question of editorials is one of the most important we have. To me it is about the hardest part of my work. It is obviously impossible for the average editor to write scientific articles on every specialty. I myself call on individuals who I think are particularly prepared to write on a certain subject. We have never used the policy of buying editorials.

DR. FRANK H. JACKSON: The government has used a vast amount of propaganda, both in the press and over the radio, directed against not only the American Medical Association and state medical associations but also men officially connected with them. They picked them out and designated them with smearing tactics. That is decidedly unfair. There are very few people in the United States, comparatively speaking, who read medical journals. We have to transmit what we have learned and heard today to our various state constituents. I want that to get before the people in my state, the public of Maine. I want the man who votes, the man who thinks, who pays the taxes, to know what this Association stands for, that we are not obstructionists and that we are willing to help, no matter what the politician says. Doctor, how are we going to get a liaison? What are we going to do about this? I think it important that we work this out among ourselves.

DR. SAMUEL J. KOPETZKY, New York: We write an editorial in the state of New York for the state journal. The powers that be in the editorial office and in the council of the state society decide that it is good and accept it. If it has a message which, in their considered judgment, should go further than among the circle of medical men they strike off a release and it is sent to the editors of the big city papers. It is sent around to a list that is kept in the state society's public relations office; thus, it gets out. When the medical profession shows an unbroken rank, send and carry your message to the public. We do it frankly. We frankly label it and there has been neither criticism nor repercussion. We do not sneak it out

camouflaged. It comes out in the open frankly, with a heading from this department of our state medical society. In that way, by a continuous effort, we also feel we speak to the public.

DR. JACKSON: You mentioned the large dailies. Those help, of course. What have you done about the small country newspaper that reaches thousands and thousands of people?

DR. KOPETZKY: They are on the mailing list in our state.

DR. JACKSON: What is the reception as a general rule?

DR. KOPETZKY: Good, because it is frank and open. There is no subterfuge propaganda. It is the message of the state society.

DR. JACKSON: Have you yourself seen these editorial fellows and know them, so they can come back and talk to you?

DR. KOPETZKY: I am out of it entirely. I never talk to a newspaper man or know an editor unless I happen to know him outside the field of my work. Anybody who talks to him talks to the official representative of the state society of New York and not to the editor. The editor is finished when he sends in his article, which is to be published anonymously. If it is adopted and accepted, it is the official voice of the society. I never talk to him personally as editor. I never tried to, for fear I might overtalk myself.

CHAIRMAN DRAKE: Any suggestion for the editors for cooperation with the state secretaries? I know that in our state we send out newspaper releases continuously. I don't know whether they ever use any of the editorials in the medical journal or not. It is a good idea.

DR. E. M. SHANKLIN, Indiana: Relative to the contact with the lay public throughout Indiana—speaking in an editor sense—we depend entirely on our publicity committee. It sends out 382 releases every week. They go to the newspapers all over the state. They are published and are read.

DR. MORRIS FISHBIN, Chicago: I have written many editorials in my time, including editorials not only for THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION but also for a considerable number of other publications. Any editorial, to reach the people and to animate them to action, which is the purpose of an editorial, must have fire, must have "go," must have life. Many editorials in medical journals do not have life, do not have fire. You cannot put fire in an editorial by using what used to be called "namby-pamby" words. You must use words that have fire. I think of the fellow who was brought into court by an old woman. He was working with a wire crew back of her house; the fellow on top who was soldering the wire managed to drop a little hot lead, which went down the back of the neck of the boy below, concerning which he made some enthusiastic remarks. She haled him into court and said he had used language such as she had never heard before.

The judge said "Just what did you say?"

He said "When that hot lead went down my back I looked up and said 'You oughtn't to do that, Alfred!'"

Every once in a while you must speak strongly. Some people will resent what you have written. They will say "It was not in good taste. He should not have been so strong; it hurt." It was intended to hurt. It was intended to get results; the fact that there was remonstrance shows that it was effective. There have been innumerable books and articles written on the construction of editorials. There is a standard form for an editorial, particularly a scientific editorial. Begin by stating the question. Next discuss the evidence, that is, the data to which Dr. Kopetzky refers. Then draw the conclusion. I believe the *New York State Journal of Medicine* is one of the best journals of medicine published by any of the states. The public relations job which New York is doing now is an excellent public relations job. Some of the other states are also doing excellent public relations jobs. The extent of a public relations job depends entirely on the amount of money you have to spend. With \$250,000 a year you can do a better public relations job than you can do with \$3,000 a year. Not all of the states can spend on public relations jobs what New York spends. The American Medical Association cannot spend on a public relations job what the United States government can spend on that kind of a job. Nobody can spend on a public relations job

what the United States government has spent and is spending on its own public relations. I do not read every editorial in all of the state medical journals, but I read many of them. I go through all of the state medical journals every month as they come out. The improvement that has taken place in state medical journals in the last twenty years is so tremendous that it is almost inconceivable to any one who has not watched the gradual evolution. As to the throw-away medical journals, they should disappear entirely from the medical scene. They represent a cancer in the field of medical publications. The entire medical profession has a responsibility in relationship to these publications. What they print in general is vicious in that they oppose organized action by stimulating discontent. What they do in the way of fostering advertising that is unscientific, in many instances, is vicious if not fraudulent. These magazines appeal to the lowest instincts of their readers. They dish out the kind of material your own state journals would not and could not publish. A periodical which copyrights its material can protect itself against the plagiarism that is involved in lengthy quotations in any other publication. Where they take a few words from an article and rewrite them in their own language there is usually not violation of copyright in my opinion.

DR. W. EDWIN BIRD, Delaware: Some years ago, when we were having our journal printed by the largest printer in Wilmington, we got only a moderate amount of quotations of our editorial page. This firm finally failed. When we cast around for another printer, we went to the Star Publishing Company, which prints the *Sunday Star*, the only Sunday newspaper in Delaware. Since that time, practically every editorial that had any local application at all has been reprinted in full.

DR. EDGAR A. HINES, South Carolina: I want to ask about this little word "we" in editorials, when Dr. Kopetzky urged anonymity. Sometimes I don't put it in an editorial at all for a long time and then, by force of habit, I find the little word creeping in. Perhaps I will get General Taylor's journal from Texas and find a "we" in there. I can imagine Holman Taylor, as well as I have known him for twenty-five or thirty years, prancing up and down his editorial offices and stressing this "we" over and over again to several stenographers. But my impression is that the "we" doesn't appear in the editorials of the American Medical Association.

DR. FISHBEIN: The style book of the American Medical Association press discourages the use of the word "we" unless the persons represented by "we" are suitably identified. In all scientific writing, identification of the individual is important. When you are discussing editorially the policies of your state medical association and you say "In the Georgia State Medical Association we have recently adopted the policy," that use of the word "we" would be correct because the antecedent's identity is what is meant by the word "we," but suppose you begin an editorial by saying "We oppose all of the actions recently taken by the council of the New York State Medical Society," who is that "we"? That "we" is not identified. That "we" is presumably the writer, possibly the editor of the journal. In other words, the only proper use of the word "we" is when the persons included in this personal pronoun are in the mind of the reader. You will find a long discussion of the various uses of the word "we" in most of the different style books that have been published by presses throughout the country. I would suggest to most editors that you send for the style book of the *New York Times* or of the *Chicago Daily News*, or of the University of Chicago press.

DR. A. T. McCORMACK, Kentucky: The late Henry Watterson, who was an authority on editorial writing, said it was all right to say "we" if you were twins or had a tapeworm, if you would put a star and make a statement of the fact at the bottom of the column.

DR. KOPETZKY: I don't want to monopolize the discussion, but I think Dr. Fishbein hit the nail absolutely on the head. There is another angle I just want to add. "We" is used in an editorial whenever the journal speaks in the name of the organization. Editorially, it should never speak in anybody else's name. Consequently the "we" has a place. "We" (the state journal); "We" (the organization in the state of New

York) "believe and hold thus and thus"—never "I." The editor should be submerged. In informative reports, clinical reports, articles, lectures and addresses, it is pseudomodesty on the part of the man who is reporting. If he doesn't want to use the "I," why does he write it at all? He has his name on the top of it, and he usually puts on two or three titles if he holds them. We delete all but one, always giving him the most prominent title. When he is reporting literature we give the name quoted, reference, documented; but when he comes to conclusions and says what he specifically does, the reason for the article, why trouble the ear-weary public with his presentation at all? Then he should say "I say so," "I think so," and "I do so and so." I don't believe any rules are better than the rules they have in *THE JOURNAL*, that little slip which comes when you have to correct manuscript, telling you the format. The form in which the American Medical Association and its special journals come out are in a class of medical journals by themselves, just because they all conform to that high standard. The scientific technical editorials that are procured from other sources than the immediate home editorial staff also should not be initiated. If you accept them and you adopt them, they become editorial policy and should come out anonymously. If they are quoted, the journal should be quoted and credited and not the "I. C. A." who signed it. If the I. C. A. is writing something so specific that the editorial board cannot adopt it as its point of view, it should not be in an editorial at all; it should be an individual article signed by the man. Finally, editorials that you buy—we buy editorials—should be rewritten. No matter how bad your style is, if you continually hold it up to your people they will finally like it and get used to it. The whole editorial page should have a certain character, even with all its shortcomings. We can't all be Fishbeins. But they should be rewritten by the editorial staff in the language you want to use to your membership. After a while it sort of becomes like the specific uniform of a regiment. That is the way the state journal looks, and that is the way it talks, no matter where the ideas come from.

DR. CREIGHTON BARKER, Connecticut: These gentlemen from the great states of Indiana and New York talk glibly of \$250,000 for public relations, and they talk in sort of deprecatory fashion about \$3,000. I am under the impression that Dr. Jackson doesn't have \$300 for public relations. I know I don't. There is a way you can get at it. It isn't the interesting device suggested by the gentleman from Delaware. Medicine, these days, is good press and I think it is possible to make friends with the press. I take exception to the ivory tower Dr. Kopetzky places himself in, that he is unwilling to talk to the press. I am interested in promulgating the policies of the Connecticut State Medical Society, so on every Friday afternoon I have a press conference, just like the President of the United States. I have three big dailies that come out in 10,000 editions on Sundays, and they are glad to get stuff from me. The country dailies and weeklies get the stuff Fishbein wrote after it has been recast five or six times. They welcome it. It is interesting stuff, but it has to have some zip in it, just as Dr. Fishbein says. If you can bring in something that comes home to them they will publish it. I think you can make friends of the press, and I don't think it costs any money. It takes time. You and I haven't \$3,000 or \$250,000. All we have is time. You have cast-iron weeklies in Maine, the same as we have in Connecticut. They will like the stuff if you will send it to them, and if you send it regularly in a friendly fashion and kind of bring home the ideas the people want, these cast-iron weeklies will publish it. Don't forget the press conference.

DR. PETER IRVING, New York: I think what Dr. Barker of Connecticut is doing is to do a public relations job without himself being paid for it. He really ought to have more salary than he is getting from his state society for that particular piece of work.

DR. FRANK H. JACKSON, Maine: I have talked to a great many editors of small papers. In fact, in Maine we have small papers. We have a paper which oftentimes I hardly think is friendly to organized medicine, even if it is in friend Kopetzky's domain. But I have found this out: that the editor of the small country paper is delighted to have the ideas that organized

medicine give him. There are a great many country people who read thoroughly their small weekly paper, and they believe a great deal in what it says. It is all right to talk about the public relations committee that my friend Kopetzky has in New York. A public relations committee exists in the state asso-

ciation in Maine. I can say it is decidedly inadequate. The only way I know is to do as my friend Barker does, become friendly with these fellows, and when some controversial issue comes out you can get a great deal in an honest way through your combating it.

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES
BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

MAINE

MAINE MEDICAL ASSOCIATION

The Committee on Graduate Education of the Maine Medical Association through its chairman, Dr. Frederick T. Hill, has expressed the opinion that it has been generally accepted, over the past two years, that the medical profession must assume the responsibility for a continuation program of professional education.¹ Heretofore any effort of this kind has been left largely to the initiative of the individual physician. In the past it has been assumed that the responsibility for medical education has rested largely with the medical school. It is now realized that the school's responsibility may cease at the time of graduation and yet the physician's education must be continued through the years, for medicine is not static. Medical organizations can assume this responsibility and must, especially where the initiative of the individual is lacking.

During the past seven years the Maine Medical Association has changed the character of its two annual meetings and has consistently improved its programs, elevating the educational standard. Those physicians who attend the annual summer meetings may benefit from the two mornings devoted to group conferences. These meetings are held in a resort hotel, away from the cities. At the fall clinical sessions, two full days are given to clinical demonstrations, group clinical conferences, case reports and round table discussions. These meetings are held in one of the four cities of the state where hospital facilities are available for clinical instruction. Local physicians conduct day clinics and ward rounds, utilizing the facilities of cooperating local hospitals. Daytime sessions are held from 9:30 a. m. to 5 p. m., followed by dinner, with the first evening devoted to a panel discussion of a subject of current interest. For example, anesthesia was discussed by four out of state and two Maine physicians in October 1939. The second evening a guest speaker discussed another subject as part of the regular program of the local county medical society.

Attendance at the annual summer meetings of the state association has varied from 318 to 466 and at the fall clinical conferences from 216 to 249. There are 987 physicians in Maine, 718 of whom are members of the state medical association.

Two years ago the committee on graduate education developed a program modeled on the panel system in which usually six or more Maine physicians were assigned to certain phases of the subject under discussion. Each was limited to fifteen minutes and during this time other members of the panel could interrupt with questions or objections, thus permitting a more or less continuous debate. Also questions from other physicians were discussed. An effort was made to cover the topic selected in approximately two hours. Panel discussions available for county medical society programs included pneumonia, cardiorenal disease, fractures, acute appendicitis, laboratory procedures, thoracic surgery, blood dyscrasias and convulsions. A chairman was appointed for each topic selected. In the last two years practically all the fifteen county societies in the state have invited the committee on graduate education to give panel discussions. No fees are charged; the state association in 1938 appropriated \$500 to pay the travel expenses of panel participants.

GRADUATE FELLOWSHIPS

Practicing physicians of Maine are afforded the unique opportunity of having their graduate study financed in other states where ample facilities for clinical instruction have been more fully developed. The graduate committee of the state association has cooperated with the Bingham Associates Fund and the

Commonwealth Fund, of New York, in an endeavor to allocate available fellowships where most needed.

Applicants for Commonwealth Fund grants must be under 45 years of age, graduates of approved medical schools, in good standing with the Maine Medical Association and in practice for five or more years in communities of less than 10,000 population. Fellowships are provided in Boston hospitals for one month in medicine, pediatrics, obstetrics or office surgery. The stipend is \$250 plus tuition and travel expenses.

Bingham Associates Fund fellowships are available to members of the Maine Medical Association, each carrying an honorarium of \$250. The New England Medical Center, Tufts College Medical School, Boston, provides rooms and meals for fellows at reduced rates. One week fellowships, sufficient to pay expenses only, are offered also. Subjects included are obstetrics and gynecology and pediatrics, one month each; allergy, hematology and proctology, forty hours each, and diabetes, endocrinology, electrocardiography, cardiology, genitourinary diseases, diseases of the chest, gastro-enterology and dermatology. Classes are limited to from four to six physicians.

Approximately 15 per cent of the physicians practicing in Maine have taken fellowships offered by either the Bingham Associates Fund or the Commonwealth Fund and an additional 10 per cent have independently engaged in similar study.

RECOMMENDATIONS FOR CONTINUATION STUDY

In May 1939 the state medical association's committee on graduate education recommended (1) that greater coordination be developed between the annual summer meeting and the annual fall clinical session to insure a long-range point of view, (2) that panel discussions in county societies be continued, (3) that hospital staff programs, utilizing clinical material for case studies, be encouraged, (4) that the state association participate in the New England Post-Graduate Assembly, held in Boston, and (5) that fellowships offered by the Bingham Associates and the Commonwealth funds be more generally utilized.

INSTRUCTION IN OBSTETRICS AND PEDIATRICS

An extension course in obstetrics and pediatrics was given in 1936-1938 under the auspices of the Maine State Department of Health and Welfare, in cooperation with the Maine Medical Association. An obstetrician and a pediatrician from Maine were engaged for the lectures, which were given in the six councilor districts of the state. Afternoon and evening sessions were illustrated with movies. Obstetric subjects included normal labor, forceps procedures, breech presentations and, in pediatrics, asphyxia, vomiting and injuries of the newborn. Three of six lectures were given in each locality. Attendance during 1936-1937 was 216 in obstetrics and 160 in pediatrics. In 1937-1938 the attendance totaled approximately 130 physicians. No registration fees were charged, since federal funds were utilized.

LENDING LIBRARY FACILITIES

The Frederic Henry Gerrish Memorial Library, Lewiston, Maine, established in December 1936 with a grant from the Bingham Associates Fund at the Central Maine General Hospital, serves the medical profession of the state with recent periodicals and other reference material. There are 124 foreign and domestic periodicals received by the library. In addition, there is a large collection of selected reprints. Approximately 400 journals are requested each month. Items may be borrowed for a period of two weeks by members of the Maine Medical Association. A rotating library service through six associated hospitals was begun a year ago. Six current journals are mailed to each hospital each month and remailed by each hospital until the circuit is completed. A part time librarian is employed. The cost of this library service approximates \$1,000 annually.

1. Hill, F. T.: The Place of the Panel Discussion in a Program of Graduate Education, editorial, J. Maine M. A. 30:69 (March) 1939.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Bills Introduced.—H. R. 7550, introduced by Representative Mundt, South Dakota, proposes to authorize an appropriation of \$1,000,000 to construct in the first congressional district of South Dakota a veterans' hospital to be designated as the "Royal C. Johnson Memorial Veterans' Hospitals." H. R. 7703, introduced, by request, by Representative Rankin, Mississippi, provides that the rate of disability allowance payable to a World War veteran on account of non-service connected permanent total disability shall be \$50 a month. H. R. 7704, introduced, by request, by Representative Rankin, Mississippi, provides that there shall be paid to any World War veteran who, as the result of service incurred disability, has suffered the anatomic loss or the loss of the use of one foot, or one hand, or one eye, compensation at the rate of \$35 a month. H. R. 7705, introduced, by request, by Representative Rankin, Mississippi, proposes to authorize the Administrator of Veterans' Affairs to insert in the rating schedule of the Veterans' Administration a minimum rating of permanent partial 1 per cent for any service connected disability incurred during the World War and a minimum rating of permanent partial 10 per cent for wounds incurred in line of duty in

active service during the World War. H. R. 7707, introduced, by request, by Representative Rankin, Mississippi, proposes to make temporary disability ratings of World War veterans permanent after ten years. H. R. 7724, introduced by Representative Bland, Virginia, proposes to extend the provisions of the United States Employees' Compensation Act to employees of the Federal Civil Works Administration. H. R. 7729, introduced by Representative Izac, California, proposes to authorize an appropriation of \$1,000,000 to construct a veterans' hospital, with a capacity of at least 200 beds, in or near the city of San Diego. H. R. 7763 and H. R. 7764, both introduced, by request, by Representative Rankin, Mississippi, propose respectively to grant hospitalization and domiciliary care to any veteran of the Regular Army, Navy, Marine Corps or Coast Guard who was not dishonorably discharged, subject to the same restrictions and limitations as are applicable to war veterans. H. R. 7812, introduced by Representative Whelchel, Georgia, provides that the Administrator of Veterans' Affairs shall provide domiciliary care, medical and hospital treatment and burial benefits to certain veterans who were placed on the pension roll in 1922 and grant them an increase of pension.

WOMAN'S AUXILIARY

Washington

At a meeting of the auxiliary to the Grays Harbor County Medical Society in Hoquiam November 15, Mrs. Kenneth Graham discussed legislation of interest to the medical profession and Mrs. M. F. Fuller reviewed "Dr. Adams" by Irving Fine-man. An auxiliary project is to announce the radio broadcasts given by the American Medical Association and the state medical society.

Dr. Horace Whitacre conducted an open forum on the subject "Doctor, How Can I Keep Well?" in Tacoma November 9. The meeting was sponsored by the auxiliary to the Pierce County Medical Society and more than 350 persons were in attendance. The program was given later over the radio.

Dr. Arthur Lein, president of the Spokane County Medical Society, discussed the care of the premature infant at the October

meeting of the auxiliary in Spokane. Dr. Harry Rhodehamel, past president of the Washington State Medical Association, spoke on medical legislation at an auxiliary meeting November 9.

Wisconsin

The auxiliary to the Oconto County Medical Society has as its chief project the placing of *Hygeia* in all of the public schools of the county. Dr. J. C. Sargent, past president of the Medical Society of Wisconsin, discussed "Hospital Insurance" at a meeting in Oconto October 16. The auxiliary sponsored the meeting.

At a meeting of the auxiliary to the Manitowoc County Medical Society in Manitowoc November 15, Mrs. A. D. Bussey reviewed "Life and Death" by Dr. Andrea Majocchi.

Dr. Rock Sleyster spoke on "The Art of Medicine" at a meeting of the auxiliary to the Medical Society of Milwaukee County in Milwaukee November 10.

MEDICAL ECONOMIC ABSTRACTS

HEALTH PROGRAM OF THE INTERNATIONAL LADIES' GARMENT WORKERS

Abstract of article by Dr. Leo Price, Assistant Director, Union Health Center, in Monthly Labor Review 49: 811 (Oct.) 1939.

The Union Health Center was organized by the International Ladies' Garment Workers Union with a membership of approximately 275,000 in 1913. Its headquarters are in New York City's Garment Center, where the majority of its membership is located. It occupies a floor space of approximately 20,000 square feet, outfitted with x-ray, laboratory and other diagnostic equipment. More than \$150,000 has been spent thus far to equip this institution, the director of which is Dr. George M. Price. The center does not provide complete medical care. Its primary purpose is to provide care for the immediate benefit of ambulatory patients and to give the physical examinations required for admission to the union and administer the sick benefit schemes conducted by any of the locals. These insurance plans provide for cash disability during illness.

Income is derived from fees collected from patients and from the sickness insurance fund for examinations and a subsidy provided by the parent organization. The cash insurance plans cover an estimated membership of 105,867. It may be significant that the system of examination and treatment by private physi-

cians has kept the rate of claims much lower than in compulsory systems or most voluntary systems. In 1938 4.43 per cent of the members made claims for disability, of which 11.76 per cent were denied. Those granted had an average disability of 35.44 days' disability. This represents the extremely low morbidity of 1.4 working days per insured worker, which average disability period varied but little in the thirteen locals having insurance systems. Regular cash benefits varied from \$7 to \$10 a week and tuberculosis benefits from \$70 to \$350 a year or sanatorium care. Owing to the nature of the industry, special emphasis is placed on the treatment of tuberculosis and eye defects. No regular arrangements have as yet been made for hospitalization, although assistance has been given and steps have been taken in that direction.

A footnote gives the following interesting comment:

The union has not favored contract arrangements with physicians, a practice which is opposed by the American Medical Association. Other unions have been ignorant of the dangers of such a program and have fostered competition among physicians by offering union members "full" medical services for as little as \$1.50 to \$3 per member per year—rates which are entirely out of keeping with the accepted standard cost of medical care. Because of the small return to the contracting physician, such a plan fosters a tendency to make up for the low rates by special treatments and charges to the worker and his family so that ultimately the original purpose of providing good medical care at reasonable cost is defeated. Good and complete medical care on a prepayment basis can be provided only at rates varying from \$25 to \$38 per year, the rate depending upon a variety of factors such as the number of subscribers, their geographical distribution, and the scope of medical facilities offered.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

Course on Obstetrics.—Dr. Everett D. Plass, professor of obstetrics and gynecology, State University of Iowa College of Medicine, Iowa City, gave a series of lectures on obstetrics recently in Kingman, Williams, Flagstaff, Winslow, Holbrook, Safford, Phoenix, Yuma, Florence and Tucson. Among the subjects were delayed labor and contracted pelvis, toxemia of late pregnancy, anesthesia in obstetrics, delivery and postpartum routine, bleeding in early pregnancy, abortion and puerperal infection. The courses were financed by the maternal and child health division of the state department of health and were given in cooperation with the committee on maternal welfare of the state medical society.

CALIFORNIA

Annual Postgraduate Assembly.—The sixth annual postgraduate assembly was presented at the College of Medical Evangelists December 17 in Los Angeles. The following participated:

- Dr. Rollin Russell Best, Omaha, Biliary Tract Disease and the Indications for Pharmacodynamic Biliary Flush.
- Dr. Garnett Cheney, San Francisco, The Gonococcus Complement Fixation Reaction in General Medical Practice.
- Dr. Clyde W. Collings, New York, Transurethral Prostatic Surgery.
- Dr. Vernon C. David, Chicago, Etiologic Considerations of Carcinoma of the Colon and Rectum.
- Dr. Claude F. Dixon, Rochester, Minn., Medical and Surgical Management of Certain Colonic Lesions.
- Dr. Willis D. Gatch, Indianapolis, Surgical Prognosis.
- Dr. Orrie E. Ghrist, Glendale, Importance of Depth Perception with a Demonstration of Third Dimension Motion Pictures.
- Dr. Carl R. Howson, Los Angeles, Newer Therapeutics in Tuberculosis.
- Dr. James A. Jackson, Madison, Wis., Open Reduction Treatment of Fractures.
- Dr. Donald E. King, San Francisco, Common Mistakes in the Handling of Simple Fractures.
- Chauncey D. Leake, Ph.D., San Francisco, Appraisal of New Drugs.
- Dr. Johannes M. Nielsen, Los Angeles, Insulin and Metrazol Treatments.
- Dr. Earl C. Padgett, Kansas City, Mo., The Advantages of Superficial and Deep Intermediate Skin Grafts as Cut by the Dermotome.
- Dr. Lester D. Powell, Des Moines, Iowa, Consideration and Surgical Treatment of Uterine Prolapse.
- Dr. Wilhelm Raab, Burlington, Vt., A New Theory and New Therapy of Angina Pectoris.
- Dr. Ralph M. Tandowsky, Los Angeles, Significance of Cardiac Arrhythmias in Hypertensive Heart Disease.
- Dr. Harry J. Templeton, Oakland, Management of Warts.

COLORADO

New Health Officer for Denver.—Dr. Charles Smith has been appointed health officer of Denver with headquarters at the Denver General Hospital, newspapers reported December 19. He will have charge of public health details formerly handled by Dr. Theodore I. Williams, deputy manager of health and charity, who now will have time for other administrative duties. Carl P. Schwalb is manager of health and charity. Dr. Smith graduated at the University of Colorado School of Medicine, Denver, in 1930 and recently completed a course in public health at the University of California.

GEORGIA

The Jonte Equen Memorial Lecture.—Dr. Harris P. Mosher, Walter Augustus Le Compte professor emeritus of laryngology and otology, Harvard Medical School and the graduate school, Boston, will deliver the third Jonte Equen Memorial Lecture of the Fulton County Medical Society at the Atlanta Biltmore Hotel, Atlanta, January 26. His subject will be "Sinus Disease—Osteomyelitis of the Frontal Bone."

ILLINOIS

Hospital News.—The construction of a tuberculosis hospital at the main institution of the Lincoln State School and Colony will soon be started, according to *Helfare*. The hospital will provide beds for thirty-three male and thirty-three female patients in two large wards and four private rooms.

Society News.—Dr. Kellogg Speed, Chicago, discussed "Fractures About the Elbow Joint" before the Madison County Medical Society, Edwardsville, January 5.—A symposium on

epidemic tracheobronchitis was presented by Drs. Chevalier L. Jackson, Philadelphia, and Joseph Brennemann, Chicago, before the Peoria City Medical Society January 4. Dr. Willard Var-Hazel, Chicago, addressed the society January 16 on "Diagnosis and Treatment of Empyema."

Free Drugs and Pneumonia Typing Service.—Rabbit serum and sulfapyridine for the treatment of all types of pneumococcal pneumonia are now available from the Illinois Department of Public Health free to physicians if the typing is done in a laboratory approved for that purpose by the department. Continuous day and night service is maintained at all serum centers. Typing is done free at the state and municipal laboratories. Physicians are asked not to request serum unless the typing has been done in an approved laboratory, nor for patients ill with pneumonia for more than ninety-six hours.

Chicago

Course on Gonioscopy.—A course on the "Technic of Gonioscopy and Interpretation of Gonioscopic Findings" will be given at the Illinois Eye and Ear Infirmary February 12-17 from 11 a. m. to 12:30 p. m. daily. Physicians with at least two years' experience or training in ophthalmology are eligible. The course will be limited to four persons and will consist largely of clinical work. The fee is \$25 to be paid on registration. Applications should be addressed to the Dean of Education, Illinois Eye and Ear Infirmary, 904 West Adams Street.

Hospital Clinical Conference.—The first midwinter clinical conference sponsored by the Ravenswood Hospital January 31 will include a symposium on peptic ulcer with the following speakers: Dr. Fred M. Drennan on "Etiology, Diagnosis and Latest Medical Treatment," and Dr. Charles F. Sawyer, "Differential Diagnosis and Surgical Treatment." Dr. David L. Jenkinson will give a demonstration on x-ray diagnosis and Dr. Josiah J. Moore will show pathologic specimens. Other speakers will include Drs. James H. Hutton and Willard O. Thompson on "Treatment of the Menopause" and "Hypogonadism in the Male," respectively.

New Quarters for Tumor Clinic.—Dedicatory exercises of the new quarters for the tumor clinic of Michael Reese Hospital will be held January 25 in the Rothschild Auditorium, Nurses' Residence, with Mr. Harry N. Gottlieb, president, board of directors, presiding. Dr. Erich M. Uhlmann, director of the clinic, will give the introductory address. Arthur H. Compton, Ph.D., professor of physics, University of Chicago, will discuss "Possible Benefits of New Types of Radiation" and Carl Voegtlin, Ph.D., chief, National Cancer Institute, Bethesda, Md., "Problems in Fundamental Cancer Research." The new tumor clinic has adequate space for the examination, diagnosis and treatment of patients suffering from neoplastic diseases. There is also a laboratory for biophysical research. Specially protected rooms have been constructed for the housing of a 4 Gm. radium bomb for deep radium therapy, in addition to which 0.5 Gm. of radium in smaller units will be available for superficial and interstitial application. Two new x-ray machines, designed to be operated by a single transformer with the unusual feature of measuring directly the exact dosage on the patient, have been provided for this department. These new facilities have been made possible by the families of Max Straus and David Silberman.

MAINE

Society News.—At the November meeting of the Portland Medical Club Drs. Langdon T. Thaxter and Jack Spencer spoke on the use of x-ray in the study of acute abdominal conditions. Dr. Robert R. Linton, Boston, addressed the evening meeting of the Kennebec County Medical Association November 16 on "Peripheral Vascular Diseases."—Dr. Joseph T. Smith, Boston, discussed eclampsia before the Penobscot County Medical Association, Bangor, November 21.—At a meeting of the Somerset County Medical Association recently Dr. William Dameshek, Boston, conducted a clinic and discussed the anemias.

MICHIGAN

Personal.—In recognition of their long service in the Coldwater community, plaques were presented December 21 by the Branch County Medical Society to Drs. Arthur G. Holbrook, Samuel Schultz and Robert L. Wade.

New Deputy Health Commissioner.—Dr. Carleton Dean, for nine years health officer of the district health unit at Charlevoix, has been appointed deputy commissioner of the Michigan Department of Health and director of the bureau of local health service. He succeeds Dr. Albert S. McCourt.

Lansing. Dr. Dean will direct the state's program for the promotion of effective public health services in the sixty-one counties having full time health departments and further the organization of similar departments in the twenty-two counties which do not yet have this service. Dr. Dean graduated at the Detroit College of Medicine, now Wayne University College of Medicine, in 1924 and has been president of the Michigan Public Health Association.

Annual Clinic Day.—The staff of the Mount Carmel Mercy Hospital, Detroit, will hold its annual clinic day and banquet in Detroit January 31. The speakers will include:

Dr. Orus R. Yoder, Ypsilanti, Management of the Neurotic Patient in Private Practice.
Drs. Elmer L. Sevringhaus, Madison, Wis., Robert L. Schaefer, Detroit, and Robert C. Moehlig, Detroit, Adaptation of Glandular Therapy by General Practitioner (round table discussion).
Dr. Sidney D. Kramer, Lansing, Virus Diseases in Everyday Practice.
Dr. Frank Riggall, Prairie Grove, Ark., Preoperative and Postoperative Management of Biliary Disease.
Dr. Norman F. Miller, Ann Arbor, Obstetrics in General Practice.

Dr. Louis J. Garipey, Detroit, will be toastmaster at the dinner at the Statler Hotel and speakers will include Dr. Stanley W. Insley, Dr. Ralph H. Pino, the Rev. Urban Freundt and the Rev. Charles E. Coughlin, Detroit. Father Coughlin's subject will be "Government Medical Care—How Far Should It Go?"

MINNESOTA

Society News.—Dr. Carl B. Drake delivered the president's address before the Minnesota Academy of Medicine in St. Paul January 10 on "Applications of Hydrodynamics to the Circulation."—Dr. Albert G. Schulze, St. Paul, discussed "Prenatal Care and Its Relation to the Late Toxemias" before the Ramsey County Medical Society, St. Paul, December 18.—Drs. Richard R. Cranmer and Leo W. Fink, Minneapolis, addressed the Scott-Carver Medical Society at New Prague December 12 on acute conditions of the abdomen and the important functions of the nose, respectively.

Court Upholds Suspension of License.—Judge Carlton McNally of the District Court of Ramsey County made an order affirming the five year suspension of the license of Dr. Gottfried Schmidt, Lake City, Dec. 16, 1938, by the state board of medical examiners following a hearing in which he was found guilty of advertising "professional superiority to, and greater skill than, that possessed by fellow physicians and surgeons," and of "conduct unbecoming a person licensed to practice medicine in the State of Minnesota and detrimental to the best interests of the public." The testimony before the medical board showed that Dr. Schmidt represented to patients that he was able to diagnose diseases by having the patient deposit sputum on a piece of paper, which was then placed on the abdomen of either the patient or a woman employed by Dr. Schmidt in his office at Lake City, and then having the patient, or the employed person, hold various medicines in his or her hand. The testimony also showed that Dr. Schmidt had represented to patients that he had a machine in his office by which he could broadcast treatments to patients without the necessity of the patients coming to his office. Dr. Schmidt was warned by the medical board in 1936 to stop these practices. He graduated at the University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, in 1903.

MISSOURI

Dr. Fishbein to Address Public Meeting.—Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, will address a public meeting at the St. Louis Medical Society Building, St. Louis, January 30 under the auspices of the Missouri Social Hygiene Association, the Young Men's Division of the Chamber of Commerce of St. Louis and the St. Louis Medical Society. The subject will be "Quackery in Medicine."

Physicians Honored.—Dr. Louis H. Hempelmann, St. Louis, was guest of honor at a dinner November 28 celebrating the fiftieth anniversary of the Deaconess Hospital, St. Louis. Dr. Hempelmann, the oldest staff member in years of service, was presented with a watch.—Seventeen members of the faculty of St. Louis University School of Medicine who have served for twenty-five years were honored at a dinner November 30 sponsored by the Women's Club of the school of medicine. Replicas of the seal of the university were presented to each guest of honor: Drs. Theodore Greiner, Joseph Grindon Sr., Andrew C. Henske, Helmuth H. Kramolowsky, Albert Kuntz, James F. McFadden, Fritz Neuhoft, Claude D. Pickrell, Madison J. Pulliam, Alphonse J. Raemdonck, Philip

H. Scherer, Eugene T. Senseney, Solomon A. Weintraub, William Weiss and John Zahorsky. Drs. Eugene F. McCarthy and T. Wistar White, who have also served twenty-five years, were unable to attend.

NEW JERSEY

Society News.—Dr. Morris Edward Davis, Chicago, addressed the Essex County Medical Society, Newark, January 11 on "Treatment of the Late Toxemias of Pregnancy."—Dr. Robert H. Ivy, Philadelphia, addressed the Camden County Medical Society, Camden, January 2 on "Surgical Conditions of the Face and Jaws."—Dr. George Wilson, Philadelphia, addressed the Cape May County Medical Society at Somers Point January 9 on "Interpretation of Pain."—Dr. Reginald Fitz, Boston, addressed the Bergen County Medical Society, Hackensack, January 9 on "Types of Edema and Their Treatment."—Friedrich Gudernatsch, Ph.D., New York, will deliver a lecture on "Twins, Multiple Births and Monsters" February 7 at the Academy of Medicine of Northern New Jersey, Newark, under the auspices of the New Jersey Association of Medical Record Librarians.

NEW YORK

Gastro-Enteritis Due to Raw Milk.—Eighty cases of gastro-enteritis in the village of Frewsburg in Chautauqua County recently were traced to raw milk distributed by one dairy. All but three of the cases had their onset between November 4 and 14 and all were in persons who patronized the dairy or who had secondary infection from primary cases, according to *Health News*. It was found that a woman on one of the farms that furnished milk to the dairy had suffered a similar disturbance with first symptoms November 1. She had not milked the cows but had washed the milk cans and pails.

Personal.—Dr. Thomas P. Farmer, Syracuse, chairman of the council committee on public health and education of the Medical Society of the State of New York, was among six prominent citizens cited by the Rotary Club of Syracuse recently. The citation pointed out that Dr. Farmer had been health commissioner of the city, president of the Syracuse Academy of Medicine and the Onondaga County Medical Society, that he created the Institute of Diet and Nutrition sponsored by the state medical society and the state dietetic association and that he is chairman of the Syracuse Housing Authority.—Dr. Mark M. Kroll, Cresskill, N. J., has been appointed full time medical consultant in social hygiene on the staff of the New York State Department of Health.

New York City

Society News.—Dr. John Hamilton Crawford gave a Friday afternoon lecture of the Medical Society of the County of Queens January 5 on "Coronary Disease."—Dr. Cornelius P. Rhoads will address the New York Pathological Society January 25 on "Aplastic Anemia" and Drs. David Goldstein and Irving Graef, "Influence of Sulfanilamide and Sulfapyridine on Evolution of Experimentally Induced Pneumococcus Pneumonia in Rats."—Dr. Henry L. Jaffe addressed the New York Roentgen Society January 15 on "Findings in Cases Generally Misinterpreted as Cortical Bone Abscess or Sclerosing Osteomyelitis of Long Bones."

The City's Health in 1939.—The general death rate in New York for the year 1939 was 10 per thousand as compared with 9.8 for 1938, according to the annual report of the department of health. The number of deaths was 75,439. The increase was attributed to an outbreak of respiratory infection that occurred in the first quarter of the year. New low rates were reported for infant mortality (37.1 deaths per thousand live births), maternal mortality (3.1 per thousand live births), diphtheria (1.4 deaths per hundred thousand children under 15), pneumonia (55.7 per hundred thousand of population), tuberculosis (50.3), typhoid (0.3), homicides (3.9) and automobile accidents (11.6). Deaths from diseases common in later life increased. Deaths from cancer numbered 11,591, an increase of 431 over 1938; from diabetes, 2,938 against 2,650; diseases of the heart, arteries and kidneys, including apoplexy, 33,770 against 31,562 in 1938. The birth rate continues to decline, the health commissioner said, being only 13.5 per thousand in 1939. The 1938 rate was 13.6; in 1930 it was 17.7. The commissioner emphasized the fact that there was no outbreak of communicable disease or food poisoning during the World's Fair. Progress is being made in bringing tuberculosis under control. In 1939 examinations were made of 196,000 persons

in the health department's diagnostic and consultation stations as against 187,000 in 1938. Wassermann tests increased 100,000 over 1938; the diagnostic laboratory made more than 600,000 in 1939. There were 184 cases of poliomyelitis with seventeen deaths and seventy-one cases of epidemic meningitis with twenty-seven deaths. Appendicitis continues to be a major cause of death. In 1939 there were 798 deaths, a rate of 10.5 per hundred thousand of population. Suicides declined to a rate of 15.3 from the high point of 22.5 in 1932. Two new health centers were completed during the year, both to be teaching and training centers operated in conjunction with medical schools. In addition five new child health stations were opened.

NORTH CAROLINA

Outbreak of Influenza.—Schools in several sections of the state were delayed in opening after the holidays because of the wide prevalence of influenza. The areas affected were Charlotte and Mecklenburg County, Asheville, Belmont and Gastonia. A training period for a regiment of the national guard was postponed because of the epidemic in and about Charlotte.

PENNSYLVANIA

Personal.—Dr. Fred E. Ross, Erie, was recently appointed medical director of Erie County, succeeding Dr. James T. Strimple.—Dr. Abram P. Seligman, Mahanoy City, was the guest of honor of the Shenandoah Medical Society at its annual banquet in November. Dr. Seligman graduated from Jefferson Medical College of Philadelphia in 1892 and settled in Mahanoy two years later.

Philadelphia

New Hospital Dedicated.—Nazareth Hospital, a new seven story building with a capacity of 195 beds, was dedicated January 7 and will be open for patients in February. The hospital is owned and operated by the Sisters of the Holy Family of Nazareth, and Dr. Basil R. Beltran is the medical director.

Society News.—Drs. Michael Scott and Edwin O. Geckeler addressed the Northern Medical Association December 18 on "Intraspinal Causes of Low Back and Sciatic Pain" and "Extraspinal Causes of Low Back and Sciatic Pain" respectively.—Dr. Herbert T. Kelly addressed the Philadelphia Dietetic Association December 12 on "Development of Deficiency Disease in the Presence of a Basic Diet."

Dr. Tracy Appointed to Public Health Post.—Dr. Martha Tracy, dean of the Woman's Medical College of Pennsylvania, has been appointed assistant director of public health of Philadelphia. Dr. Tracy will continue as dean of the college until the end of the present college year or until her successor is elected. She has been a member of the city board of health since 1936. Dr. Tracy took her medical degree from the Woman's Medical College of Pennsylvania in 1904 and the degree of doctor of public hygiene from the University of Pennsylvania in 1917. She has been associated with the woman's college since 1913, as professor of physiologic chemistry 1913-1921; professor of hygiene, 1921-1923; professor of preventive medicine 1923-1931, and dean since 1918.

Pittsburgh

Society News.—Speakers before the Allegheny County Medical Society January 16 were Drs. Frank H. Rimer, "Report of Twenty-Seven Cases of Epistaxis Treated with Snake Venom"; Edwin P. Buchanan, "Carcinoma of the Breast"; Edward J. McCague, "Observations on the Constancy of the Clinical Manifestations in Diseases of the Kidney and Bladder," and William W. G. MacLachlan, "Clinical Aspects of Pneumonia."—Dr. John O. Rankin, Wheeling, W. Va., was the guest speaker at a meeting of the Pittsburgh Surgical Society January 11 on "Treatment of Recent Fractures of the Neck of the Femur by Internal Fixation."

RHODE ISLAND

Conferences on Obstetrics.—The Rhode Island Medical Society and the division of maternal and child health of the state department of public health have announced a program of conferences on obstetrics to be given at the Providence Lying-In Hospital in coming weeks. The speakers will be:

Drs. Alfred L. Potter, Nutritional Factors in Pregnancy, and Milton Goldberger, demonstration of the Aschheim-Zondek Test, February 7. Dr. Russell R. Hunt, demonstration of a new method of x-ray pelvimetry, and George W. Waterman, Obstructed Labor, February 14. Dr. Ira H. Noyes, Prolonged Labor, February 21. Dr. Paul Appleton, Toxemia of Pregnancy, February 28. Dr. Bertram H. Buxton, Hemorrhages of Pregnancy, with a film on treatment, March 6.

WASHINGTON

Society News.—Dr. Stuart W. Harrington, Rochester, Minn., will be the guest speaker at the annual meeting of the Seattle Surgical Society January 26-27.—Drs. Harry Feagles, Chehalis, and Charles G. Bain, Centralia, addressed the Cowitz County Medical Society, Longview, November 16 on "Peritonitis Treated with Peptone Broth" and Dr. Arthur B. Shaw, Longview, "Salivary Calculi."—Drs. John R. Hand and Laurence Selling, Portland, Ore., addressed the Grays Harbor County Medical Society, Aberdeen, November 15 on "New Methods of Treating Renal Calculi" and "Common Diseases of the Spiral Cord" respectively.—Drs. Charles P. Larson and Don G. Willard, Tacoma, addressed the Pierce County Medical Society, Tacoma, recently on "Thrombosis of the Veins of the Extremities, Significance and Prevention" and "Principles of Intestinal Obstruction" respectively.—Dr. T. Homer Coffen, Portland, Ore., addressed the December meeting of the Walla Walla Valley Medical Society, Walla Walla, on "Old and New Ideas on Heart Disease."

WEST VIRGINIA

Annual Schwinn Lecture.—Dr. William P. Sammons, Wheeling, delivered the annual Jacob Schwinn Scientific Lecture of the Ohio County Medical Society, Wheeling, January 12 on "Compressed Fractures of the Vertebrae."

Conference of County Officers.—Mr. Thomas A. Hendricks, executive secretary of the Indiana State Medical Association, was the guest speaker at the annual conference of county medical society secretaries and presidents in Charleston January 6. Among other speakers were Drs. Delivan A. MacGregor, Wheeling; George M. Lyon, Huntington; Elbert Newton DuPuy, Berkeley; James L. Wade, Parkersburg, and Mr. A. W. Garnett, director of the West Virginia department of public assistance.

WISCONSIN

Tuberculosis Association Chooses Secretary.—Dr. Oscar Lotz, Milwaukee, was elected executive secretary of the Wisconsin Anti-Tuberculosis Association November 13 by the executive board. Dr. Lotz succeeds the late Dr. Hoyt E. Dearholt. Dr. John A. Carswell, formerly of Briarcliff Manor, N. Y., was appointed assistant executive secretary.

Warfield Memorial Lecture.—The Milwaukee Internists Club, the Wisconsin Anti-Tuberculosis Association and the Milwaukee Academy of Medicine will sponsor the Louis Warfield Memorial Lecture January 23 in Milwaukee. The lecture will be delivered by Dr. Julius Bauer, New Orleans, on "Problems and Practical Value of Constitutional Pathology."

Society News.—Dr. Lawrence R. Gowan, Duluth, Minn., addressed the Ashland-Bayfield-Iron Counties Medical Society, Ashland, December 7 on "The Place of Psychiatry in General Practice."—Dr. Mynie G. Peterman, Milwaukee, addressed the Brown-Kewaunee-Door County Medical Society, Green Bay, December 21 on "Immunization in Acute Infectious Diseases."—Dr. Harold E. Marsh, Madison, discussed heart disease at a meeting of the Green Lake-Waushara County Medical Society, Berlin, December 12.—Dr. Thomas J. Dry, Rochester, Minn., addressed the La Crosse County Medical Society, La Crosse, December 12 on "Management of Cardiac Disorders."—Drs. William A. O'Brien and Lawrence R. Boies, Minneapolis, addressed the Polk County Medical Society in Osceola December 14 on "Anemia" and "Some Common Problems in Otolaryngology" respectively.

ALASKA

New Hospital at Bethel.—A new forty-two bed hospital was recently opened at Bethel, the Commissioner of Indian Affairs reported to the Department of the Interior. An epidemic of meningitis in the natives of this area last year emphasized the need for medical facilities, it was said. This is the eighth in a series of ten hospitals planned for the natives. It is said to be the largest general hospital of the Indian Service in Alaska.

HAWAII

New Commissioner of Public Health.—Dr. Marion F. Haralson, senior surgeon, U. S. Public Health Service, has been appointed commissioner of public health of the Territory of Hawaii, according to a release from the service. His assignment to this duty was as of December 5. Dr. Haralson graduated at the University of Virginia Department of Medicine, Charlottesville, in 1915.

PUERTO RICO

Activities of the School of Tropical Medicine.—George W. Bachman, Ph.D., director of the School of Tropical Medicine of the University of Puerto Rico, which is conducted under the auspices of Columbia University, New York, recently made his annual report. More than forty investigations are now in progress in collaboration with various scientific, educational and governmental institutions. Among the subjects are vital statistics, maternal health, prevalence of syphilis, streptococcal infections in the tropics, sprue, biologic characteristics of pneumococci isolated in Puerto Rico, infections from intestinal bacteria and intestinal parasites, mucositis of the gastrointestinal tract, the effect of sulfanilamide on recurrent tropical lymphangitis. Fourteen gibbons and 439 rhesus monkeys were added during the year to the primate colonies on the island of Santiago in order to make available conditioned animals free from disease and with known histories. A program of weekly conferences and lectures for the medical profession has been developed. A building program begun in 1935 will be completed by the end of next year. Wings have been added for offices and laboratories, the university hospital plant has been reconditioned and a modern animal house has been constructed. A new library and a building for physiology are now being erected on land transferred to the school by the War Department.

GENERAL

Western Meeting of Otolaryngologists.—The western section of the American Laryngological, Rhinological and Otolological Society will hold its winter meeting in Los Angeles January 26-27. The speakers will include:

- Dr. William J. McNally, Montreal, Canada, Labyrinthine Examinations in Aviation.
- Dr. George L. Tobey Jr., Boston, A Brief Critique of Some of the Therapeutic Measures Now in Vogue in Otolaryngology.
- Dr. Casper W. Pond, Pocatello, Idaho, Tumor of the Pituitary Gland, Paget's Disease and Abscess of the Sphenoid Sinus, with Case Report.
- Dr. Robert C. Martin, San Francisco, Recent Experience with Facial Nerve Repair.
- Dr. Arthur C. Jones, Boise, Idaho, Osteomyelitis of the Frontal Bone.
- Dr. Simon Jesberg, Los Angeles, Selection of Treatment for Carcinoma of the Larynx.

Examination for Director of Los Angeles County Hospital.—Announcement is made of an examination to fill the position of director of Los Angeles County General Hospital. Applications should be filed no later than January 30, the date of the examination to be announced later. Applications will be sent on request and should be filed at 102 Hall of Records, Los Angeles. Applicants should be at least 30 and not over 55 years at date of examination and should be graduates of approved medical schools. At least ten years' recent experience in the practice of medicine is essential, of which five years or more must have been as director, superintendent, assistant director, assistant superintendent or business manager or in an equivalent position in an approved hospital of 250 or more beds furnishing general hospital services.

Meeting on Venereal Disease Control.—The twenty-seventh annual meeting of the American Social Hygiene Association and a conference on control of syphilis and gonorrhea with special reference to quackery and unethical practices will be held at the Palmer House, Chicago, February 1-2. Among the speakers at the first day's session will be:

- Dr. Raymond A. Vonderlehr, U. S. Public Health Service, Washington, D. C., Facilities for Treatment of Syphilis and Gonorrhea in the United States—Are They Adequate to Meet Our Needs?
- Dr. Waller S. Leathers, Nashville, Tenn., Adequacy of Preparation—Are We Giving Physicians the Training and Technics They Need?
- Dr. Rock Sleyster, Wauwatosa, Wis., President, American Medical Association, Role of the Private Physician—How Can He Strengthen the Control Program?
- Mr. Walter G. Campbell, chief, U. S. Food and Drug Administration, Washington, Quack Medicine for Gonorrhea and Syphilis.

At a dinner meeting the William Freeman Snow Medal will be awarded by Major Gen. Merritte W. Ireland on behalf of the American Social Hygiene Association. Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, will deliver the principal address at the second day's session.

Tribute to Scientists for Work on Botulism.—At its annual convention in 1939 the National Canners Association adopted resolutions acknowledging the work of Dr. Jacob C. Geiger and Karl F. Meyer, Ph.D., and the late Willard D. Bigelow and Dr. Ernest C. Dickson in the study of botulism. Copies of the resolution were presented at a recent dinner in San Francisco to Dr. Meyer, director of the Hooper Founda-

tion for Medical Research, San Francisco, and to Dr. Geiger, director of health of the city and county of San Francisco. Dr. Loren R. Chandler, dean, Stanford University School of Medicine, San Francisco, received the token on behalf of the late Dr. Dickson and a copy was presented to Mr. Bigelow shortly before his death. In 1917 research on food poisoning along broad lines was inaugurated in the department of preventive medicine and hygiene, Harvard Medical School, Boston, under the direction of Dr. Milton J. Rosenau, now of Chapel Hill, N. C. For five years this investigation was financed by the National Canners Association in cooperation with the National Research Council. In August 1919 an outbreak of botulism occurred in Canton, Ohio; eleven persons were affected and seven died. This was the first outbreak recognized as due to commercially canned foods when botulinus toxin type A was demonstrated in the brine of a jar of ripe olives. Several other cases developed from the same pack of olives. Under the direction of the National Canners Association, the Canners League of California and the California Olive Association, a commission was organized in November 1919 to supervise the research on botulism on the Pacific Coast, with Mr. Bigelow, then director of the canners' association's research laboratories, in charge. The most important result of subsequent investigations was the laying of a sound foundation for determining safe processes for all commercially canned low acid foods susceptible to botulinus spoilage.

CORRECTIONS

Desoxycorticosterone Acetate for Addison's Disease.—In THE JOURNAL, Nov. 18, 1939, page 1875, Hick and Barnes stated that the case of Addison's disease which they reported was controlled by desoxycorticosterone; they report now that the compound used was desoxycorticosterone acetate.

Dr. Mills' Degrees.—In a news item reporting his address before the Wayne County Medical Society, Detroit, December 18, the name of Clarence A. Mills appeared in THE JOURNAL, Dec. 30, 1939, p. 2433, with a Ph.D. degree. Dr. Mills has also an M.D., having graduated at the University of Cincinnati College of Medicine in 1922.

Government Services

Examinations for Positions in Public Health Service

The U. S. Public Health Service is holding examinations to establish eligibility for appointment in the commissioned corps in the grade of assistant surgeon (medical only). Applicants must not have passed their thirty-second birthday on the date the examination is taken, must be citizens of the United States and graduates of a recognized medical school and must have completed by July 1 next at least one year of internship or its equivalent. The board of examiners will be in the following places on the dates specified:

- U. S. Marine Hospital, Cleveland, January 22.
- U. S. Marine Hospital, Louisville, Ky., January 23.
- U. S. Marine Hospital, New Orleans, January 25.
- U. S. Marine Hospital, Kirkwood, Mo., February 2.
- U. S. P. H. S. Hospital, Fort Worth, Texas, February 5.
- U. S. P. H. S. Relief Station, Los Angeles, February 8.
- U. S. Marine Hospital, San Francisco, February 12.
- U. S. Marine Hospital, Seattle, February 16.
- U. S. Marine Hospital, Chicago, February 20.
- U. S. Marine Hospital, Baltimore, February 27.
- U. S. Marine Hospital, Norfolk, Va., February 28.
- U. S. P. H. S. Building, Washington, D. C., March 1.

Candidates should arrange to have their physical examinations completed at any one of the places listed just prior to the date of the examination. Those who complete the physical and other portions of the examination will be permitted to participate later in the written portion of the examination beginning March 4 either at the place where the physical examination was given or at some other nearer place; or candidates may go to Washington March 1 to take the entire examination. The written and clinical portions will consume about three days. Any travel expense to be incurred must be defrayed by the applicant. Application blanks may be obtained from the Surgeon General, U. S. Public Health Service, Washington. These forms may be filled out and delivered personally to the board of examiners or blanks may be obtained from the board at the time of examination. Applicants will be required to present their diplomas and evidence of United States citizenship to the board.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 16, 1939.

Control of Venereal Disease in the War

In the four years of the world War 400,000 cases of venereal disease occurred in the British army, representing a great loss of fighting power. The practice when a soldier was infected was to evacuate him from his unit to a hospital for venereal disease at the base, where he remained until cured or judged to be noninfectious. In some cases men on home leave deliberately acquired venereal disease, usually gonorrhea, in order to avoid returning to the front line. In large towns prostitutes suffering from venereal disease specialized in accosting soldiers and telling them that intercourse would enable them to acquire the disease, with the advantage of being sent to the base. There were instances of men inoculating the urethra with pus obtained from a friend suffering from gonorrhea. In the present war the military authorities have adopted a different system. Except in cases presenting serious complications all men in the early stages of syphilis, or suffering from acute anterior gonorrhea or soft sore, will be treated in the field and not evacuated to a special hospital at the base. The advances in the therapy of venereal diseases made since the last war enable treatment in the field to be more readily carried out. A venereologist of wide experience, Col. B. L. Ank, has been lent to the army by the Ministry of Hygiene to direct the venereal diseases branch. At the base is a large hospital for venereal diseases where complicated cases, including those of untoward effects of therapy, are treated.

For syphilis the concurrent intermittent scheme is adopted. The arsphenamine preparations used are stabilarsan (a double glucoside of arsphenamine) in solution or any neoarsphenamine approved by the Ministry of Hygiene. The arsphenamine injections are given thrice weekly in doses of 0.25, 0.30 and 0.45 Gm., making 1 Gm. in all. The bismuth compound used is liposoluble. The treatment covers a period of fifty-five weeks, during which the man leaves his unit for four periods of ten weeks, when he is an ambulant patient in the venereal diseases section to receive injections. Serologic tests are made every three months for two years. The treatment is designed not only to render the man noninfectious but to cure him.

The routine treatment of gonorrhea is daily posterior irrigation with 1:8,000 potassium permanganate and 3 Gm. daily of sulfapyridine for the first week and 2 Gm. for the second week. If at the end of the second week there is still some urethral discharge or the urine is not clear, the treatment is continued for another week. In all but rare cases cure is achieved within three weeks. Testing for cure is carried on over a period of ten weeks. Soft sore is treated by 3 Gm. daily of sulfapyridine during the first week and 2 Gm. during the second week. A vaccine is given intravenously on alternate days. Mild antiseptic dressings are applied. The great majority of patients can resume duty at the end of the second week.

PREVENTION

Medical officers give talks to the troops on the prevention of venereal disease at intervals of three months. All soldiers leaving England receive a leaflet on the subject before embarking. In the talks and leaflets it is emphasized that the only certain way to avoid disease is to abstain from extramarital intercourse. Any soldier who indulges must report within twelve hours to a medical unit or to a medical inspection room for preventive treatment. This consists in (1) urination, (2) washing thoroughly the external genitals and adjacent parts with soap and water, the prepuce being retracted, (3) irrigation of the anterior

urethra with 1:8,000 potassium permanganate, (4) instilling into the anterior urethra of 10 per cent solution of mild protein silver, of which a little is allowed to escape at minute intervals, and after five minutes the meatus is sealed with collodion to retain the small quantity which remains until the next micturition (after four hours), (5) massage by the patient thoroughly into the genitals, pubic, perineum and adjacent part of the thighs from 2 to 4 Gm. of mild mercurous chloride ointment.

The Standardization of Stretchers

For some time the standardization of stretchers and ambulance equipment has been under consideration. Difficulty has arisen in several ways. The enormous development of blocks of flats in recent years has led to the greater use of elevators, which are seldom large enough to take existing stretchers. In mines it has been found that when the injured man is placed on an ordinary stretcher this will frequently not fit in the ambulance sent to take him to the hospital. The matter has come under the consideration of the Hospitals Committee of the British Medical Association, which referred it to the British Standards Institution, a body which has effected much standardization in industry. A technical committee was then set up with representatives of government departments interested, including the fighting services, the British Red Cross Society, the St. John Ambulance Association, the Mining Association of Great Britain and the British Medical Association. A draft specification has been issued and sent to all interested parties for comments and suggestions.

It is recommended that the overall length of the stretcher with fixed handles should not exceed 7 feet 9 inches and that 6 feet should be the standard length for the stretcher with sliding handles when these are pushed in underneath. This length has been used by the fighting forces since the war began. All ambulances should be built to accommodate the 7 foot 9 inch stretcher, and in large buildings the elevators, staircases and corridors should be constructed to take this lift. The present locking devices in bracket supports of ambulances and on hospital trolleys are of various patterns and act with only a limited range of stretchers. It is recommended that straps with buckles be substituted. The supports in hospital trolleys to accommodate stretchers should be by angle brackets attached to the uprights. The width of the brackets should be 2 inches and their distances apart internally should be 44 inches.

The Country's Better Health

The annual report of the chief medical officer of health, Sir Arthur MacNalty, shows that the improvement in the public health, which has been continuous in recent years, was maintained in 1938. The birth rate was 15.1 per thousand living against 14.9 for the previous year. The infant mortality was 53 per thousand births against 58 for 1937 and was the lowest on record. The crude death rate was 11.6 per thousand persons, against 12.4. The low infant mortality, though deserving praise, is higher than that of some other countries, notably some of the American states and the Netherlands, although it is possible that the statistics may not lend themselves to exact comparison. The number of cases of infectious disease notified in England and Wales during 1938 was 299,867 against 302,890 in 1937. The chief causes of death in order of mortality were diseases of the heart and circulatory system, cancer, bronchitis, pneumonia and other respiratory diseases, diseases of the nervous system and tuberculosis. But when the diseases are rearranged to show the principal killing ones operating during the working life—from 15 to 65 years—tuberculosis takes the third place instead of the fifth, and diseases of the nervous system the fifth. The reduction of maternal mortality continues. This was 2.97 per thousand births against 3.13 in 1937, making the lowest ever recorded, as the 1937 figures previously was. The deaths from tuberculosis numbered 26,176. The decline of mortality from

tuberculosis has been in progress for many years but has been greater since 1931 than at any other time in this century and has been most marked among young adults and children. In contrast to all these favorable figures the mortality from cancer has again increased, particularly in women. The deaths from the disease numbered 68,605, an increase of 1,614 over those for 1937

Immunization Against Tetanus

In the battles fought over the highly manured soil of France, tetanus was a scourge of the wounded in the last war. Passive immunity, by injection of antitoxin, was the treatment. In this war active immunity, by injection of tetanus toxoid, is being used as a prophylactic. The medical service in France is going through a period of watching and waiting, but all the hospitals are kept complete in every detail. As yet there has been no specialization, though this was adopted in the last war for certain types of wounds. If found desirable, this can be quickly done. Specialist groups of medical officers exist and can be sent wherever required. Consultants, surgeons and bacteriologists have been and are being appointed on the recommendation of the governing bodies of the medical profession. At home the young conscripts are undergoing training. Their health is excellent, indeed better than that of the regular army in peace time.

BERLIN

(From Our Regular Correspondent)

Dec. 2, 1939.

Regulation of Medical Practice During the War

War measures have drastically affected the medical care of the public. About one third of the practicing physicians connected with the sick funds have been called to the colors. It was therefore decreed that physicians who have no connection with social insurance must extend medical service to members of the sick funds. The situation makes mandatory that the status, as well as the fees, of substitute physicians replacing those conscripted be regulated. Fee regulation applies also to physicians not mobilized but required to assume additional duties. In order that the absence of physicians at the front may not injure their practice, other physicians are prohibited, for the duration of the war, from opening an office at a new location. It is no longer permissible for a practicing physician when called to the colors to select his own substitute, on the ground that this would result disadvantageously to those unable to do so. Physicians available as substitutes are now officially registered and assigned where needed. Since these substitutes use the offices and equipment of absent physicians, the latter are reimbursed. A substitute physician already actively established may continue his functions. Additional duties arising from imposed assignments receive no separate compensation. Only such physicians as previously had no practice of their own receive a definite percental compensation, amounting to 9 marks (\$3.60) daily in the case of an unmarried man, until he completes his fifth year after having been admitted to practice, after that 10 marks (\$4) and to 12 marks (\$4.80) daily for a married man, and after that 13.50 marks (\$5.40) under the same conditions. Besides, 1 mark (40 cents) is allowed for each child. The purpose of these regulations is to protect a physician's practice and income to a certain degree during the war. In future a physician will be paid only a flat rate for medical services performed for members of the sick funds. This rate will be governed by the previous net income, in accordance with the income tax for 1938 (special services such as obstetric cases are excepted). Mobilized physicians continue to receive their fees through the sick fund association of Germany. These are likewise regulated by the net income. From this the salary is deducted which the physician receives as officer at the front, as well as a sum covering the compensation for free board

and lodging received at the front, wherever this occurs. This compensatory sum amounts to 50 per cent for single men, 20 per cent for married men. Mobilized physicians are furthermore limited to a monthly upper income level of 800 marks (\$320) in cases of single men and 1,200 marks (\$480) for married men. This regulation is based on the assumption that this income level represents a high income even in peace times and must include considerable fees from private practice besides the income from the sick fund practice.

Epidemics in the History of Germany

Professor Kisskalt, hygienist in Munich, has commented on the subject of epidemics as they affected Germany's evolution in *Forschungen und Fortschritte* (Research and Progress). During the middle ages many major and minor pandemics of the plague hindered the growth of the population. The loss of human lives was tremendous. Three fourths of the inhabitants died in the French speaking regions of Avignon; in Marseilles more than half; in German speaking regions, for example, in Strasbourg 16,000, in Basel 14,000, in Vienna 40,000. Several centuries later similar records of the large loss of human lives are authenticated. The plague was especially virulent during the thirty year war (1618-1648). The toll taken by the plague was estimated at 12,000,000 people. The next most dangerous disease was smallpox. According to investigations made in the eighteenth century, 11.4 per cent of all those born in the same year died in the same year of the disease.

Quackery Under Naziism

In the last few years several reports have been made regarding lay practitioners (*THE JOURNAL* June 10, 1939, p. 2449; Dec. 2, 1939, p. 2073). These charlatans have acquired under naziism increased prestige. The following regulations now govern the cooperation of physicians with nonphysicians: Physicians are permitted to treat patients in cooperation with nonphysicians if the latter have been licensed under the lay practitioners' law. This does not affect the duties of physicians to give emergency aid. Physicians may admit nonphysicians as observers in operations, hypnotic treatments and in similar conditions only if this cooperation concerns licensed lay practitioners, in other words, officially endorsed quacks.

Significant statistics for 1937 are furnished by a medical journal of Bavaria in the case of 1,024 "healers" (*heilbehandler*). The methods used to examine patients, without indicating the therapy used, were auscultation and percussion three, diagnosis of eyes forty-six, examination of hair one, examination of nails one, oscillation diagnosis seven, astrology one, examination of urine eleven, examination of tongue one; total, seventy-one. No information was available for the remaining 447 "healers." However, the list is sufficient to indicate the huncorbe practiced. An amelioration of these conditions is planned by means of examinations (compulsory examinations to determine the minimum of attainments).

Bang's Disease

Six hundred cases of Bang's disease were reported in Germany in 1938. In forty-three cases the presence of *Brucella abortus* was determined in the blood; however, no abortions due to the bacillary infection were observed. All cases were individual phenomena. Transmission from man to man was not noted. Death occurred in nine cases, but Bang's disease did not constitute the immediate cause of death in the majority of the cases. In 1936, 597 cases were observed; in 1937, 586.

Nobel Prize Declined

Citizens of Germany are not permitted to accept the Nobel prize (*THE JOURNAL* Dec. 11, 1937, p. 2002). Nevertheless, the Nobel prize committee has again, guided by scientific appraisals alone, accorded the prize to two German scholars: Professor Domagk (*THE JOURNAL* Nov. 4, 1939, p. 1738) and

Professor Butenandt. Butenandt's prize was divided between him and Professor Rucicka, of Switzerland. In accordance with government instruction, Domagk and Butenandt have declined the prize. They are to receive from the government, however, a compensation commensurate with the monetary value of the Nobel prize.

FINLAND

(From a Special Correspondent)

Dec. 18, 1939.

The Red Cross Goes into Action

The axiom that effective peacetime work is the best preparation for the work of the Red Cross in war is being confirmed daily at the present time. For many years the Finnish Red Cross has done yeoman service in the social field, notably for child and infant welfare. And for many years Field Marshal Mannerheim, now in command of Finland's armies, has been president of Finland's Red Cross. A giant physically as well as mentally, he is an ideal leader in times such as these. A score of years ago he was the national hero of Finland's war of liberation, a moral force worth many divisions.

When war broke out, the Red Cross was well prepared. The Ladies' Committee of the Red Cross had issued a leaflet, printed in Finnish on one side and in Swedish on the other, telling the public what to do on hearing an air raid warning. The same committee has also given demonstrations in air raid precautions and has employed special films, exhibited in one of the leading cinemas in Helsinki (Helsingfors), to teach the same lesson. In a bilingual country, such educational work is rather complicated, but the Swedish-speaking and Finnish-speaking elements in the country are cooperating through the Red Cross as harmoniously as possible. Private quarters in Helsinki have been taken over by the Red Cross for the preparation, collection and distribution of surgical dressings and other medical stores. First aid outfits, issued in different sizes, include surgical dressings, acetylsalicylic acid tablets, camphor drops, ointments and disinfectants.

The generosity with which the national Red Cross societies of other countries have come to the aid of Finland's Red Cross is almost overwhelming. The contributions in money soon ran into seven figures, and the contributions in kind assumed colossal dimensions. But all are welcome and sorely needed. The crown princess of Sweden and other members of the royal family have sent Finland's Red Cross a large supply of surgical dressings with a letter of greeting to Field Marshal Mannerheim. The news that Red Cross ambulances are on their way to Finland from other countries has also proved most cheering. Indeed, it is perhaps through the Red Cross that Finland has received more moral and material foreign help than through any other source. What an international bond of union the Red Cross is in such a time!

The Campaign Against Tuberculosis

Tuberculosis plays such havoc in Finland that the authorities have devoted large sums to the campaign against it. Testing with tuberculin has shown that about 17 per cent of the school children of all ages are tuberculin positive. According to a Finnish school medical officer, Dr. Kulovesi, a systematic effort has recently been made to submit all positive tuberculin reactors of the school age to x-ray examinations with a view to the early detection of latent tuberculosis. The calculation has been made that about 8 per cent of all school children develop serious tuberculosis after leaving school. Dr. Kulovesi is an eager advocate of free meals for school children as the best means for reducing the number of underweight children. An argument in favor of the system of free meals at school is the observation that a certain proportion of underweight school children come from homes which, though not poor, do not for some reason or other provide satisfactory meals.

Another aspect of the tuberculosis campaign in Finland concerns sanatorium treatment. Opinions have clashed over the comparative merits of small and large sanatoriums. The former may be homelike but can seldom provide that highly skilled and technical surgical treatment which is available in a large, well staffed sanatorium. At present it is the large sanatorium which seems most in favor; witness the recent opening of the Kiljavannummi Sanatorium in the county of Nyland. Work on it was begun at the end of 1936. It is built on the shore of a lake about 1,000 meters above sea level. Of its 280 beds, 200 are for adults and eighty are for children. The accommodation of this sanatorium can be increased by fifty beds in case of need. The building has cost between 25 and 26 million marks (about \$480,000). Many of the rooms are designed to house two patients each, and the children's department is separated from the rest of the sanatorium so that the two ages need not trouble each other.

Marriages

ARTHUR EWART PARKS, Toronto, Ont., Canada, to Miss Natalie Alice Drake, of Pelham Heights, N. Y., Dec. 23, 1939.

NORMAN ELLIS SARTORIUS JR., Pocomoke City, Md., to Miss Sara Elizabeth Harding, of Richmond, Va., Oct. 28, 1939.

JOHN LYLE SHAW, Memphis, Tenn., to Miss Calista Read Johnston, of Hickman, Ky., in November 1939.

WILLIAM J. PANGMAN, El Paso, Texas, to Miss Pearl Louise Wooldridge at Santa Fe, N. M., Nov. 23, 1939.

ROBERT GADDIS PRICE, Bloomington, Ill., to Miss Catherine Justine Sinclair, of Brooklyn, Nov. 25, 1939.

Howard Douglas Fabing, Cincinnati, to DR. ESTHER CLARE MARTING, of Ironton, Ohio, Dec. 16, 1939.

BYRD STUART LEAVELL, Charlottesville, Va., to Miss Nancy Butzner, of Fredericksburg, Oct. 7, 1939.

HAROLD JACOB NORTON, Columbus, Ind., to Mrs. Anita Springer, of Greencastle, Nov. 29, 1939.

ROBERT S. SANDILANDS, La Conner, Wash., to Miss Maria Neufeldt, of Dallas, Ore., Oct. 10, 1939.

DONALD ERVIN MICHIE, Marion, S. C., to Miss Elsa Hermine Schroder, of Charleston, Dec. 2, 1939.

VICTOR J. CORDES, Wauwatosa, Wis., to Miss Nella Fopma, of Grand Rapids, Mich., Nov. 3, 1939.

PAUL S. WOLFE, Pueblo, Colo., to Miss Jessie Laura Allan, of London, England, Oct. 19, 1939.

JOHN H. MACHLEDT, Whiteland, Ind., to Miss Bernice Howell, of Greenwood, in December 1939.

REED C. PRUGH, Dayton, Ohio, to Miss Mary Elizabeth Davy, of Ewart, Mich., in October 1939.

LESTER J. POPE to Miss Wanda Bresse, both of Omaha, at Charleston, S. C., Oct. 14, 1939.

CHARLES K. LEWIS, Memphis, Tenn., to Miss Minor Banks, of Hernando, Miss., Oct. 10, 1939.

HORACE W. SHRECK, Holdrege, Neb., to Miss Sheila Brubaker, of Nelson, Nov. 5, 1939.

ROSCOE E. CONKLIN to Miss Elvera Hawkins, both of Ellensburg, Wash., Oct. 21, 1939.

WILLIAM A. HARRIS to Miss Mattie Puckett, both of Spotsylvania, Va., Oct. 18, 1939.

BERTRAM F. MOORE to DR. URSULA JOAN ROCHE, both of New York, Dec. 9, 1939.

LEO VINCENT HUGHES, Omaha, to Miss Grace Marie Finegan, of Aurora, Nov. 5, 1939.

HAROLD E. MULLER, Pittsburgh, to Miss Maxine E. Thornton, in November 1939.

ELWIN G. RAWSON, Anamosa, Iowa, to Miss Ida I. Beck, of Baldwin, Oct. 20, 1939.

MALCOLM MCNEAL SMITH, New York, to Miss Hilda Jensen, Nov. 15, 1939.

IRVING PUNTENNEY to Miss Ethel Krug, both of Chicago, Oct. 17, 1939.

BETTY HUSE to Mr. Stig Ryden, both of New York, Oct. 28, 1939.

Deaths

William Snow Miller ☉ Madison, Wis.; Yale University School of Medicine, New Haven, Conn., 1879; instructor of vertebrate anatomy at the University of Wisconsin Medical School from 1892 to 1895, assistant professor of anatomy from 1895 to 1904, professor from 1904 to 1924 and since 1924 emeritus professor; member and past vice president of the American Association of Anatomists and the American Association of History of Medicine; in 1928 the William Snow Miller Lectureship was established by the Phi Beta Pi medical fraternity in honor of his seventieth birthday; in 1934 he was awarded the Trudeau Medal of the National Tuberculosis Association in recognition of his research in the anatomy of the lung and chest; from 1889 to 1892 he served as pathologist to the City and Memorial hospitals, in Worcester, Mass.; author of numerous papers on the anatomy of the organs of respiration, anatomic relations of pulmonary tuberculosis, anomalies of the pancreas and medical biography in medical journals and the Reference Handbook of Medical Sciences; aged 81; died, Dec. 26, 1939, in the Methodist Hospital of carcinoma of the prostate.

Sumner Mead Roberts ☉ Boston; Harvard Medical School, Boston, 1925; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; assistant in orthopedic surgery at his alma mater; was an ensign in the U. S. Naval Reserve Force during the World War; served in various capacities on the staffs of the Massachusetts General Hospital, Robert Breck Brigham Hospital and the Massachusetts Eye and Ear Infirmary; on the staff of the Children's Island Sanitarium; aged 41; was killed Nov. 19, 1939, in an automobile accident.

Charles R. C. Borden, Brookline, Mass.; Medical School of Maine, Portland, 1896; member of the Massachusetts Medical Society, the American Laryngological, Rhinological and Otolological Society and the American Otolological Society; fellow of the American College of Surgeons; assistant in laryngology and otology at the Harvard Medical School, courses for graduates, from September 1912 through August 1915; for many years on the staff of the City Hospital, Boston; aged 65; died, Nov. 28, 1939, of coronary occlusion.

James S. Lock, Barboursville, Ky.; St. Louis College of Physicians and Surgeons, 1899; past president of the Kentucky State Medical Association; was the first field director of the state board of health in the work it undertook in cooperation with the Rockefeller Foundation for the eradication of hookworm disease; for many years executive secretary of the Kentucky Tuberculosis Association; aged 65; died, Dec. 12, 1939, of chronic encephalitis.

William Richard Pierce, Amsterdam, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1884; member of the Medical Society of the State of New York; for thirty-five years secretary of the Medical Society of the County of Montgomery; secretary of the staffs of the Amsterdam City Hospital and St. Mary's Hospital; formerly county coroner; aged 78; died, Nov. 8, 1939, of coronary sclerosis.

Stephen Leander Cheshire, Thomasville, Ga.; Atlanta Medical College, 1914; member of the Medical Association of Georgia; past president and secretary of the Thomas County Medical Society; was chairman of the county board of health; aged 53; on the staff of the John D. Archbold Memorial Hospital, where he died, Dec. 2, 1939, of heart disease.

Ferdinand G. Bartel ☉ Newton, Kan.; University of Kansas School of Medicine, Kansas City, Kan., 1925; member of the American Radium Society; formerly county health officer; on the staff of the Axtell Christian Hospital; aged 45; died, Nov. 26, 1939, in the Temple University Hospital, Philadelphia, of sarcoma of the ileum and lumbar spine.

William Bradley Reid ☉ Rome, N. Y.; Syracuse University College of Medicine, 1896; formerly mayor of Rome; served during the World War; at one time member of the board of health; member of the American Urological Association; on the staff of the Rome Hospital and Murphy Memorial Hospital; aged 66; died, Nov. 10, 1939.

Sylvio Roch, Montreal, Que., Canada; M.B. in 1905 and M.D. in 1907, School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal; Laval University Faculty of Medicine, Quebec, 1906; was assistant professor of hygiene, University of Montreal Faculty of Medicine; aged 57; died, Oct. 17, 1939.

Morell B. Beals, New York; New York Homeopathic Medical College and Hospital, New York, 1892; member of the Medical Society of the State of New York; at one time super-

visor of the department of health eye clinics in the public schools; aged 69; died, Dec. 5, 1939, in the Flower Hospital-Fifth Avenue Hospital.

Max Joseph Schwerd, Staten Island, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1886; member of the Medical Society of the State of New York; on the staff of St. Francis Hospital, New York, and the Richmond Memorial Hospital; aged 76; died, Nov. 8, 1939.

Daniel R. Brown, Vernon, Ala.; Memphis (Tenn.) Hospital Medical College, 1904; member of the Medical Association of the State of Alabama; formerly health officer of Lamar County; aged 56; died, Nov. 24, 1939, of injuries received when he was struck by his automobile, which ran over him as it went down an embankment.

Robert B. Blue ☉ Chicago; Northwestern University Medical School, Chicago, 1904; assistant professor of ophthalmology at his alma mater; past president of the Chicago Ophthalmological Society; attending ophthalmologist and chief of staff, Wesley Memorial Hospital; aged 63; died, Dec. 8, 1939, at his home in Flossmoor, Ill.

John Garfield Potter ☉ Houlton, Maine; Medical School of Maine, Portland, 1908; past president and secretary of the Aroostook County Medical Society; served during the World War; on the staff of the Aroostook Hospital; aged 60; died, Nov. 29, 1939, of pernicious anemia and calculi of the urinary bladder.

John Murray Salles ☉ New Bedford, Mass.; Baltimore Medical College, 1911; for many years member of the board of health; on the staff of St. Luke's Hospital, and at one time served as physician at the Bristol County House of Correction; aged 55; died, Nov. 26, 1939, of carcinoma of the ampulla of Vater.

John Porter, McKeesport, Pa.; College of Physicians and Surgeons, Keokuk, Iowa, 1877; Jefferson Medical College of Philadelphia, 1885; member of the Medical Society of the State of Pennsylvania; for many years on the staff of the McKeesport Hospital; aged 83; died, Nov. 23, 1939, of chronic myocarditis.

George Bernard Parris, Harrisburg, Pa.; Temple University School of Medicine, Philadelphia, 1939; intern at the Harrisburg Polyclinic Hospital; aged 25; died, Nov. 8, 1939, of injuries received when the ambulance in which he was answering an emergency call collided with an automobile.

Charles Arthur Oak ☉ Lynn, Mass.; Harvard Medical School, Boston, 1906; member of the Radiological Society of North America; formerly health commissioner of Revere; on the staff of the Lynn Hospital; aged 60; died, Nov. 15, 1939, of cerebral thrombosis and arteriosclerosis.

John Witham Nichols, Farmington, Maine; Medical School of Maine, Portland, 1887; member of the Maine Medical Association; a member of the staff of the Franklin County Memorial Hospital from its organization, being its first president; aged 80; died, Oct. 3, 1939, of coronary occlusion.

Edwin Raisbeck Crowe, New York; University and Bellevue Hospital Medical College, New York, 1905; member of the Medical Society of the State of New York; for many years on the staff of St. Elizabeth's Hospital; aged 61; died, Dec. 17, 1939, of coronary thrombosis.

Carl William Truter ☉ Pittsburgh; Hahnemann Medical College and Hospital of Philadelphia, 1908; fellow of the American College of Surgeons; served during the World War; aged 58; on the staff of the Shadyside Hospital, where he died, Nov. 15, 1939, of coronary occlusion.

Henry Otto Clauss, New York; Bellevue Hospital Medical College, New York, 1895; member of the Medical Society of the State of New York; on the staff of the New York Polyclinic Medical School and Hospital; aged 68; died, Dec. 2, 1939, in the Bellevue Hospital of heart disease.

Calvin M. Wilson, Franklin, Pa.; Cincinnati College of Medicine and Surgery, 1876; member of the Medical Society of the State of Pennsylvania; past president of the Venango County Medical Society; aged 84; died, Nov. 6, 1939, in the Franklin Hospital of pneumonia.

George Lincoln Stivers ☉ Tucson, Ariz.; Long Island College Hospital, Brooklyn, 1899; member of the Massachusetts Medical Society; formerly medical director of the Belmont Hospital, Worcester, and the Fall River (Mass.) Hospital; aged 61; died, Nov. 26, 1939.

Lee Russell Ranck ☉ Milton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; bank president; veteran of the Spanish-American War; aged 60; died, Nov. 14, 1939, in the Williamsport (Pa.) Hospital of nephritis and diabetes mellitus.

John Carter Johnson ♂ Ogdensburg, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1903; served during the World War; county coroner; aged 67; died, Nov. 16, 1939, at the Iola (Wis.) Hospital of carcinoma of the esophagus and stomach.

Thomas Joseph Arundel, Youngstown, Ohio; Albany (N. Y.) Medical College, 1897; member of the Ohio State Medical Association; served during the World War; aged 70; died, Dec. 6, 1939, in St. Elizabeth's Hospital of cholelithiasis and hepatitis.

Samuel Alvin Zimmerman, Valley City, N. D.; Northwestern University Medical School, Chicago, 1907; member of the North Dakota State Medical Association; aged 62; died, Nov. 23, 1939, as the result of injuries received in an automobile accident.

Joseph James Rowan, Gloversville, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1902; formerly county physician; aged 60; was found dead, Nov. 13, 1939, of a traumatic injury, coronary thrombosis and arteriosclerosis.

Charles Aaron Brownell, West Falls, N. Y.; Niagara University Medical Department, Buffalo, 1898; aged 68; died, Nov. 25, 1939, in Our Lady of Victory Hospital, Lackawanna, of coronary thrombosis, arteriosclerosis and diabetes mellitus.

Thomas Jones Walthall, San Antonio, Texas; University of the South Medical Department, Sewanee, Tenn., 1908; member of the State Medical Association of Texas; served during the World War; aged 64; died, Nov. 29, 1939.

Samuel Edwin Arnold, Decatur, Ill.; Hering Medical College, Chicago, 1900; College of Physicians and Surgeons of Chicago, 1908; member of the Illinois State Medical Society; aged 65; died, Nov. 30, 1939, of coronary thrombosis.

Alfred Robert Rogers, Los Angeles; St. Louis College of Physicians and Surgeons, 1898; served during the World War; aged 68; died, Nov. 27, 1939, in the Seaside Hospital, Long Beach, following an operation for a duodenal ulcer.

Benjamin H. Freeman, Garland, Texas; University of Nashville (Tenn.) Medical Department, 1900; member of the State Medical Association of Texas; aged 66; died, Nov. 28, 1939, of cerebral hemorrhage and arteriosclerosis.

Benjamin F. Brittain, Putnam, Texas; Missouri Medical College, St. Louis, 1888; member of the State Medical Association of Texas; president of the Eastland Callahan Counties Medical Society; aged 74; died, Nov. 26, 1939.

William Henry Jones, Hazleton, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1917; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 50; died, Nov. 29, 1939.

Richard Benjamin Penzotti, Oakland, Calif.; University of Michigan Homeopathic Medical School, Ann Arbor, 1921; member of the California Medical Association; served during the World War; aged 48; died, Nov. 6, 1939.

Swen Gideon Selen, New Oxford, Pa.; Jefferson Medical College of Philadelphia, 1928; member of the Medical Society of the State of Pennsylvania; aged 37; died, Nov. 12, 1939, of injuries received in an automobile accident.

Joseph Ralph Newell, St. Marys, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1896; member of the Medical Society of the State of Pennsylvania; aged 75; died, Nov. 27, 1939, in Jenners of coronary occlusion.

William Henry Dodds, St. Cloud, Fla.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1901; member of the Florida Medical Association; aged 67; died, Nov. 26, 1939, in Orlando of coronary heart disease.

Lloyd Hildreth Cogswell, Warner, N. H.; University and Bellevue Hospital Medical College, New York, 1901; member of the New Hampshire Medical Society; served during the World War; aged 59; died, Nov. 24, 1939.

William P. Shuler, Grover, S. C.; Medical College of the State of South Carolina, Charleston, 1893; aged 68; died, Nov. 30, 1939, in the Charles Es'Dorn Hospital, Walterboro, of lobar pneumonia and strangulated hernia.

Arthur Palen Powelson, Middletown, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1894; on the staff of the Middletown State Homeopathic Hospital; aged 68; died, Nov. 10, 1939.

William R. Elrod, Mannsville, Ky.; Louisville and Hospital Medical College, 1908; member of the Kentucky State Medical Association; president of the Taylor County Medical Society; aged 57; died, Dec. 3, 1939.

Robert James Ramsey, Milwaukee; Marquette University School of Medicine, Milwaukee, 1937; member of the State Medical Society of Wisconsin; aged 27; was killed, Nov. 4, 1939, in an automobile accident.

Levi Aubrey Barnett, Greenwood, Miss.; Memphis (Tenn.) Hospital Medical College, 1910; member of the Mississippi State Medical Association; county health officer; aged 53; died, Dec. 5, 1939, of heart disease.

John Joseph Carroll ♂ Holyoke, Mass.; University of Maryland School of Medicine, Baltimore, 1905; for many years city bacteriologist; on the staff of the Holyoke Hospital; aged 61; died, Nov. 19, 1939.

Thomas Eugene Hewitt, Summit, Miss.; Atlanta College of Physicians and Surgeons, 1902; member of the Mississippi State Medical Association; aged 61; died, Nov. 30, 1939, of chronic nephritis.

Cortland Myers ♂ Los Angeles; Columbia University College of Physicians and Surgeons, New York, 1919; aged 47; on the staff of the Good Samaritan Hospital, where he died, Nov. 27, 1939.

Charles Bryan, Milton, W. Va.; National Normal University College of Medicine, Lebanon, Ohio, 1890; University of Louisville (Ky.) Medical Department, 1896; aged 78; died, Dec. 6, 1939.

Thomas Waterhouse Skirving, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1902; aged 59; died, Nov. 11, 1939, in the Hahnemann Hospital of subdural hemorrhage.

Alfred W. Wallis, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1892; member of the Medical Society of the State of Pennsylvania; aged 80; died, Nov. 21, 1939, of thrombosis.

Frank Hurd Robinson Jr., Jamestown, N. Y.; Duke University School of Medicine, Durham, N. C., 1935; aged 27; died, Nov. 22, 1939, of injuries received in an automobile accident.

Edward Howard Dwyer, Gordon, Neb.; Barnes Medical College, St. Louis, 1898; member of the Nebraska State Medical Association; aged 67; died, Nov. 24, 1939, of cerebral hemorrhage.

John M. Wornell, Blum, Texas; University of Texas School of Medicine, Galveston, 1897; member of the State Medical Association of Texas; aged 72; died, Nov. 27, 1939.

Adolph Charles Wildhagen, Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1900; aged 61; died, Nov. 29, 1939, of coronary thrombosis.

Ella Sturdivan Hubbard, Cave Springs, Ark.; Baylor University College of Medicine, Dallas, Texas, 1905; aged 60; died, Nov. 10, 1939, at Riverside, Calif., of pneumonia.

James William Koutsky, Omaha; Creighton University School of Medicine, Omaha, 1921; aged 43; was found dead, Nov. 28, 1939, of a self-inflicted bullet wound.

James Alpheus Somers, Norwichtown, Conn.; Long Island College Hospital, Brooklyn, 1892; aged 70; died, Nov. 19, 1939, of coronary thrombosis and diabetes mellitus.

James Taylor Bradley, Grand Prairie, Texas; University of Tennessee Medical Department, Nashville, 1893; aged 67; died, Dec. 13, 1939, of cerebral hemorrhage.

James Calvin Carper, Hurricane, W. Va.; University of Louisville (Ky.) Medical Department, 1911; aged 54; died, Dec. 5, 1939, of cerebral hemorrhage.

Frederick E. Burleson, Grand Rapids, Mich.; Detroit College of Medicine and Surgery, 1916; aged 65; died, Dec. 11, 1939, of chronic myocarditis.

John Clinton Clagg, Wheeler, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1896; aged 83; died, Dec. 4, 1939, of cerebral hemorrhage.

Raimon R. Warren, Lower Salem, Ohio (licensed in Ohio in 1896); aged 86; died, Nov. 29, 1939, of myocarditis and arteriosclerosis.

G. T. McGuire, Wyoming, Pa.; Baltimore Medical College, 1898; aged 72; died Nov. 19, 1939, of cerebral hemorrhage.

James S. Cater, Hoopeston, Ill.; American Medical College, St. Louis, 1883; aged 78; died, Dec. 7, 1939, of myocarditis.

C. Lunsford Nuckols, Baltimore; Baltimore Medical College, 1893; aged 68; died, Nov. 10, 1939, of lobar pneumonia.

Albert H. Trumbauer, Coopersburg, Pa.; Jefferson Medical College of Philadelphia, 1885; aged 78; died, Nov. 29, 1939.

Frank E. Donaldson, Green Bay, Wis.; National Medical University, Chicago, 1899; aged 63; died, Nov. 26, 1939.

Bureau of Investigation

ANOTHER "REJUVENATOR" FRAUD

Ekater-Enger Treatment Banned from the Mails

A "rejuvenation" fake conducted by an individual who formerly promoted a fraudulent "diabetes cure" has been debarred from the mails by the issuance of a Post Office fraud order against the Ekater Laboratories and Enger Products, Inc., of New York, the Ekater Products Company, of Flushing, N. Y., and their officers and agents as such. The case is one more illustration of the persistence of charlatans, who, when suppressed in one field of quackery, later bob up in another.

The moving spirit in the Ekater-Enger concern was reported to be a Herman Richartz, whose exploitation of "Eksip" for diabetes has been dealt with in this department of THE JOURNAL no less than three times.

The third of these articles, which appeared in the issue of April 25, 1931, page 1425, reported the issuance of a Post Office fraud order debarring Matthew Richartz, Inc., and its officers and agents as such, from further selling Eksip through the mails. It was there shown that the Eksip fraud was first promoted in America by one Matthew Richartz. The latter, however, claimed that the stuff had originated with a "Dr. Stein-Callentfels," whom he falsely described as a "noted European specialist" and who, he said, "after a life-long study, amazed other European specialists with his famous discovery." The story continued that William Richartz, of Germany, brother of Matthew Richartz, on the death of the so-called "specialist" obtained the rights to Eksip and eventually it reached the American market, *but with a different formula!*

THE JOURNAL article also brought out that, associated with Matthew Richartz in this sordid business of victimizing diabetes sufferers was his nephew, Herman Richartz, whose Ekater-Enger outfit is the latest of his frauds to be debarred from the mails. The present fraud order brings out that one Harvey W. Johnson was for a time a partner in the Ekater-Enger business. Perhaps it is more than a mere coincidence that a person called Harry W. Johnson was particularly active in the Eksip scheme.

The Eksip fraud was hard to kill off. Although the order debarring it from the mails was issued February 26, 1931, in May of that year a correspondent in New York State passed along to the Bureau of Investigation a form letter he had received through the mails and sent out by Enger Products, Inc., of New York. This was addressed "To Users of Eksip Tablets" and announced that Matthew Richartz, Inc., had been "dissolved" and that "it has been our good fortune to have secured the stock of Eksip Tablets which this corporation had on hand at their dissolution." The tablets were offered "at attractive rates as long as they are available." The Enger Products, Inc., form letter coyly announced that all shipments would be made by *express prepaid* without revealing that Richartz had trouble mailing them.

In the following year (1932) a correspondent inquired about what she described as "Eksip or E. K. Tablets (according to size of bottle, I believe) put out by Ekater Laboratories, formerly by Enger Products Co., New York City." The label on the bottle read "E K . . . (Formerly Eksip Tablets)." The names Eksip and Enger Products, Inc., are again being used, however, judging from inquiries that the Bureau of Investigation still receives about the stuff. Both Ekater Laboratories and Enger Products were used as trade styles by Richartz and Johnson in selling the "rejuvenator" which is the subject of the present fraud order.

In this latest business Herman Richartz and Harvey Johnson, trading as Ekater Laboratories and Ekater Products Company, sold through the mails something called "Mex Gland Tabs" for the restoration of lost sexual power and the Enger Products item "Pabil Tablets," represented to restore lost youthful powers.

In his memorandum to the Postmaster General, recommending the issuance of a fraud order against these several firm names used by Richartz, Hon. Vincent M. Miles, Solicitor for the Post Office Department, brought out that these concerns purchased names of prospective victims from brokers and

solicited them at the rate of about 3,000 weekly. One of the cards soliciting an order for "Mex Gland Tabs" read in part:

"LIFE SHOULD BEGIN AT 40

"Due to strenuous living, worry and care, the glands, your source of energy and vigor, become fagged out, need stimulant and nourishment to bring back the joy of living. The entire system needs to be toned up. This can be done quickly through the proper source of supply. Those dormant and impaired glands must be fed by a tried and recognized compound, consisting of the substances found lacking in these vital organs. One which will bring back the things of youth once cherished and now longed for.

"MEX GLAND TABS

"A new compound of carefully selected gland substances found necessary to repair and stimulate dormant glands and restore them to activity. An ideal preparation for toning up the entire glandular system and restoring lost vigor and energy. EASY TO OBTAIN—INEXPENSIVE. Send no money. Merely fill out the post card below and put a 1c stamp on it and mail. A full ten day supply of MEX GLAND TABS will be sent you in plain wrapper, for which you pay the postman \$1.98 plus a few cents for postage. DO THIS NOW. If you are not fully satisfied after using half the tablets, return the balance within ten days and your money will be refunded. Fill out this card and mail."

The Solicitor's memorandum reported that the "Mex" nostrum actually had been offered for sale as a means of restoring lost sexual power to an individual described as being 71 years of age and incapable of securing an erection.

Nor were the claims made for "Pabil Tablets" any less blatant:

"JOIN THE PEP PARADE GAIN STRENGTH AND ENERGY With PABIL TABLETS

"The New Stimulator Which Works Thro The Liver and Intestines "Helps regain lost power, energy and that youthful feeling by driving out the accumulated waste and poisons in the system which drag down the strength and vitality.

"Pabil Tablets stimulate lazy and sluggish liver which due to improper activity allow the system to become clogged with waste matter, causing dizzy spells, poor circulation, gas attacks, biliousness and invites sickness and poor health.

"MAKE THIS TEST

"Take one Pabil Tablet after each meal for fifteen days and see the wonderful change that comes over you. You lose that depressed feeling and roll out of bed in the morning with a smile on your lips and a song on your tongue. Your appetite will pick up, you will enjoy your food, and health color will again show in your cheeks. They make you want to go places and do things. Don't be a sluggard any longer—enjoy your daily work and play as you did years ago."

The dénouement came when these products were shown to contain no unusual drugs or unusual combinations of drugs whatever. Mex Gland Tabs, for instance, according to statements made by Johnson before he withdrew from the business, supplemented by chemical analysis made for the Food and Drug Administration, consisted of:

Extract Nux Vomica	1/8 gr.
Orchic Substance	1/2 gr.
Prostatic Substance	1/2 gr.
Suprarenal Substance	1/4 gr.
Thyroid Substance	1/8 gr.
Dicalcium Phosphate	3 grains

The government chemists reported on Pabil Tablets as follows:

Average weight (decoated) 4.3 grs.
Ash 9.8%
Phenolphthalein 0.57 gr. per tablet
Bile salts (not more than) 1.7 grs. per tablet.
Protein material, possibly glandular, present.

Judge Miles's memorandum brought out the following:

"Uncontroverted medical expert testimony adduced at the hearing shows that loss of sexual power and youthful strength, power and energy generally are due" to many different causes. It was shown in the medical expert's evidence, that "it is necessary to eliminate the causes" of such conditions and prescribe "a particularized mode of treatment especially adapted to the individual case. The medical expert's testimony shows that 'Mex Gland Tablets' merely exert a temporary tonic effect upon the system. The medical expert testimony shows further that in some persons the thyroid substance present in the 'Mex Gland Tabs' preparation may produce a definitely harmful effect.

"According to the medical expert testimony, 'Pabil Tablets' will produce only a laxative, cholagogic effect and will not only fail to restore lost youthful power, energy and strength but on the contrary the laxation resulting therefrom will have a tendency to increase the weakness and debility of the user. The medical expert testimony shows further that when used continually the phenolphthalein contained in this preparation will produce uncomfortable and unsightly skin rashes and bring about gastric disturbances.

"Mr. Richartz and his attorney admitted at the hearing that the charges brought by the Government against 'Mex Gland Tabs' were justified and no defense was entered by them with respect thereto."

Whereas the defense offered for the promotion of Pabil Tablets was that they had not been offered for sale through the mails for lost sexual vigor, the Solicitor's memorandum nevertheless proceeded to present evidence contradicting this defense and showed that "the preparation is not only

incapable of restoring lost 'sexual' power but . . . on the contrary tends to increase the general systemic debility sought to be eliminated.

"The evidence shows that this is a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and I so find."

Following Judge Miles's recommendation a fraud order was issued on March 24, 1939, against the Ekater Laboratories and Enger Products, Inc., of New York, the Ekater Products Company of Flushing, N. Y., and their officers and agents as such. The postmasters of the cities mentioned were directed by the order to mark as "fraudulent" any letters addressed to the concerns in question and to return them to the senders.

Correspondence

HYPERSENSITIVITY TO SOLUTION OF POSTERIOR PITUITARY

To the Editor:—I read with interest the article by Walter McMann on Hypersensitivity to Solution of Posterior Pituitary. This appeared on page 1488 of the Oct. 14, 1939, issue. He stresses its rarity, which prompts me to cite the following case: In the fall of 1939 one of my patients was given 3 minims (0.2 cc.) of solution of posterior pituitary, and about ten or fifteen minutes later a generalized, pruritic, urticarial eruption developed with collapse. In an hour or so this attack disappeared following the use of 1 cc. of epinephrine 1:1,000 in divided doses. She had previously had a localized redness at the site of a similar injection given during the treatment of obesity. No other allergic fact was noted.

BERNARD SELIGMAN, M.D., Brooklyn.

BROMIDE POISONING

To the Editor:—In THE JOURNAL, Dec. 16, 1939, page 2229, an excellent example of "bromo-seltzer" poisoning is recorded by Dr. Alan Leslie, of New York. My purpose in this communication is to call attention to the incompleteness of its title "Acetanilid Poisoning" by emphasizing the role of bromides in poisoning by bromo-seltzer and other proprietary "pain killers."

According to THE JOURNAL of Dec. 29, 1906, page 2138, as quoted in "Patent and Proprietary Medicines" by J. P. Street (published by the American Medical Association in 1917) the formula for bromo-seltzer contained in each dose potassium bromide 7 grains (0.45 Gm.) and acetanilid 3 grains (0.2 Gm.). In what way the present formula may have been changed I cannot say, but sufficient bromide was present in the drug one year ago to induce poisoning of two patients seen at the Cincinnati General Hospital.

From the large doses of bromo-seltzer taken by Dr. Leslie's patient it would seem reasonable to believe that high levels of bromides would have been found in the blood and spinal fluid if these tests had been made.

When a patient has been poisoned by a combination of bromide and acetanilid, it is sometimes difficult to determine the symptoms resulting from each drug separately. A dusky gray cyanosis of the lips and nail beds of a violaceous hue is evidence of acetanilid poisoning, as is no doubt the secondary anemia sometimes observed. Coma, semicomatose states and other disturbances of the personality are common in bromide poisoning.

The exact course of events in Dr. Leslie's case has been duplicated by patients who have taken "B. C." powders, another well known headache proprietary which contains approximately 12 grains (0.8 Gm.) of potassium bromide and 4 grains (0.25 Gm.) of acetanilid per dose. These patients present the cyanosis of acetanilid and the mental state of bromidism with elevated levels of bromide in the blood and spinal fluid.

It is significant that the therapy used in Dr. Leslie's case—abundant quantities of fluid—was curative, for the fluid probably contained sodium chloride, the specific for bromide poisoning.

This communication is not offered in criticism of Dr. Leslie's report but to direct the emphasis in cases of bromo-seltzer poisoning to another substance in the powder which is capable of causing serious disease and to suggest that determinations of the level of bromide in the blood and spinal fluid be made in all cases of poisoning by bromo-seltzer and similar proprietary drugs.

HAROLD S. SCHIRO, M.D., Cincinnati.

Instructor in Medicine, University of
Cincinnati College of Medicine.

EVOLUTION OF OUR KNOWLEDGE OF TUBERCULOSIS

To the Editor:—The names of Georges Küss, Elie Metchnikoff and Otto Naegeli should be included among those who have made fundamental contributions to our knowledge of the "bug full of tricks" (Evolution of Our Knowledge of Tuberculosis, THE JOURNAL, Nov. 18, 1939, p. 1882).

It is significant that, although tuberculosis is as old as man, the mode of propagation of the disease and the universality of infection were not appreciated until the latter part of the nineteenth century. Tuberculosis was often confounded with other diseases not only in the clinic but also in the dissecting room; even under the microscope it was not understood until the eighties of the past century. Virchow, for example, taught that "nearly everything that occurs in tuberculosis which has not the form of a nodule is inflammatory in nature and is not related to the disease. . . . Caseation has nothing that is especially tuberculous; caseous pneumonia does not resemble a tubercle. . . . Phthisis and tuberculosis are two different things . . ."

That the multiple anatomic aspects of tuberculosis are but different forms of the same disease became apparent in the eighties (Grancher, J.: Thèse de Paris, 1873). Metchnikoff in 1888 gave for the first time an accurate description of the tubercle (*Virchow's Arch. f. path. Anat.* **113**:63, 1888) and of the tissues and blood components which participate in the response of the host to the acid fast invader (Fried, B. M.: Metchnikoff's Contribution to Pathology, *Arch. Path.* **26**:700 [Sept.] 1938).

It was universally entertained that tuberculosis is a hereditary disease always transmitted in utero from mother to fetus. Baumgarten, a pupil of Virchow and a co-worker of Koch, was among the leaders of this school of thought.

Georges Küss (1867-1936), a Parisian physician, was the first to demonstrate convincingly that "les enfants des phthisiques ne naissent pas tuberculeux, mais tuberculisables" (children of consumptives are not born tuberculous but are liable to become so). He was the first to interpret fully the significance of the double lesion—parenchymatous and lymphatic—resulting from the erstwhile infection with the tubercle bacillus, the so-called primary complex. He adduced evidences that the disease is not hereditary but is air borne and was the first to stress that "one of the most frequent causes of phthisis is the existence in the mediastinum of latent caseous foci which the individual harbors from infancy." Küss's monumental contribution was reviewed in some detail in a recent paper (Fried, B. M.: The Primary Complex, *Arch. Path.* **22**:829 [Dec.] 1936).

The work of the Swiss physician Otto Naegeli (*Virchow's Arch. f. path. Anat.* **160**:426, 1900) is of importance in that it demonstrated that under conditions of modern civilization nearly every adult person harbors a focus of active or healed tuberculosis or that the infection with Koch's bacillus is quasi universal.

The works of Küss, of Naegeli and of Metchnikoff lie as cornerstones in all research pertaining to the problem in tuberculosis in both man and animal conducted for the past four decades.

B. M. FRIED, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SYMPATHETIC NERVOUS SYSTEM AND HAIR GROWTH

To the Editor:—In the past as well as in the more recent outbreak of anterior poliomyelitis in Los Angeles County, in the cases treated at the Los Angeles County General Hospital, it was noted that in a large percentage as function returned in the paralyzed area of the body hirsutism developed in the overlying skin of the previously paralyzed area. When the skin area was in an exposed portion of the body the patient had to shave daily because of the hairy overgrowth for cosmetic reasons. 1. Kindly give explanation of such hairy overgrowth on the skin areas directly overlying previously paralyzed portions of body in which normal function had returned. 2. If in your opinion this hairy overgrowth is due to involvement of the sympathetic nervous system, kindly explain just what takes place. 3. If alopecia areata of a child aged 5 years, which finally becomes total alopecia at the age of 12, is due to involvement in some manner of the sympathetic nervous system, just what takes place in the sympathetic nervous system to produce such a complete alopecia? 4. Granted that you will be able to offer an explanation for the hairy overgrowth in these cases of anterior poliomyelitis, in what if any manner can such explanation be made useful in the treatment of total alopecia? Charles H. Tidd, M.D., Whittier, Calif.

ANSWER.—1. Excessive growth of hair in limbs whose nerves have been injured has been noted many times; but in contrast to the cases here reported this has usually occurred before recovery and frequently the hair has fallen out after the cure of the paralysis. Jackson and McMurtry (*Diseases of the Hair*, Philadelphia and New York, Lea and Febiger, 1912, p. 148) state that such excessive growth is probably due to a vasomotor disturbance. This might well be due to an alteration of the vegetative nervous system. It may be that this alteration persists, in the cases under discussion, after the motor nerves have been restored to normal.

2. To say "just what takes place" is impossible with present knowledge. It is assumed that dilatation of the blood vessels results in better nutrition of the hair bulb and an increased growth of hair. The functional behavior of the vegetative nervous system and its close collaborator, the endocrine system, is a highly complex subject which is just beginning to be understood. The small volume by Sachs (*The Vegetative Nervous System*, Cassell & Co., London, Toronto, Melbourne and Sydney, 1936) gives a good introduction to the subject.

3. The theory of Wright that vasoconstriction is responsible seems the most reasonable of the many theories advanced to explain alopecia areata. This agrees with the theory of Sabouraud that the function of the hair papilla is altered by a disturbance of the sympathetic nervous system. In support of this there is a great deal of evidence. Only a few of the recent contributions will be mentioned. Leriche, for instance (*Effets de quatre infiltrations du sympathétique dorsal sur un pelade trophonevrotique chez un fracture de la colonne*, *Rev. de chir.* 55:759 [Dec.] 1936), had a case of injury of the spine in the neighborhood of the seventh dorsal segment resulting in persistent pain in the region and in the occurrence of two bald areas on the occiput and the neck below it, which were accepted by Pautrier as typical alopecia areata. After other methods of treatment had failed, Leriche succeeded in curing the pain by local anesthesia. Four injections were given at intervals of two or three days. Twelve days after the last of these injections the bald spots were covered with hair and a year later there had been no recurrence of pain or alopecia. Leriche did not doubt that the spinal injury to the sympathetic nervous system was responsible for the alopecia.

Bregman (*Alopecia Areata Artificially Produced by Intravenous Injections of Quinine Hydrochloride and Ethyl Carbamate [Urethane]*, *Arch. Dermat. & Syph.* 35:285 [Feb.] 1937) had a patient, a woman of 32 who had never had any cutaneous disease, who was given a 0.2 cc. injection of quinine hydrochloride and ethyl carbamate in a varicose vein for its obliteration. The treatment was successful and she did not return for two years, when she came in again for treatment of another varicosity on the same leg. Two weeks after an injection exactly like the first one she returned and reported that ten days after the treatment a bald spot had appeared on her scalp. On inspection a typical patch of alopecia areata was found. She then stated that ten days after the first treatment, two years previously, two similar bald spots had occurred, remained for about

three months and then disappeared. Bregman believes that the quinine acting on a sympathicotonic vegetative nervous system caused in both instances the alopecia areata.

This accords with the result of the research of Feit, Throne and Myers (*Alopecia Areata: Its Relation to Metal Retention*, Report of the Eighth International Congress of Dermatology, Copenhagen, 1930, p. 732) and that of Levy-Frankel and Juster (*Recherches sur le mécanisme physiopathologique de la pelade*, *Ann. de dermat. et syph.* 9:285 [April] 1938), who found a diminished number of capillaries and a diminished size of those present in the patches of alopecia areata and evidence of spasm of the arterioles. The last named authors cite as evidence of the etiologic role of the vegetative nervous system the frequent occurrence of alopecia areata after an injury with phenomena explainable only by assuming a disturbance of the vegetative system and the closely related endocrine system. They also place weight on the frequency with which alopecia areata is associated with diseases in which the vegetative nervous system is involved, as zoster, exophthalmic goiter, facial hemiatrophy, scleroderma and vitiligo. In their series of cases they frequently found modified oculocardiac, pilomotor and nasofacial reflexes.

4. Mild local stimulation by mechanical, chemical, actinic or thermal agencies has been shown by Linser and Kähler (quoted from Galewsky, E.: *Handb. d. Haut u. Geschlechtskr.* 13/1: 132, 1932) to have a beneficial effect on the growth of hair in rabbits, supposedly by increasing blood supply. This is possibly the same way in which irritants of various kinds act in alopecia areata, overcoming the vasoconstriction. Pilocarpine is an old favorite in the treatment of alopecia. It is possible that its effect is produced in part by the absorption of the drug and its action on the vegetative system. Thyroid extract is also believed to benefit cases of alopecia areata. Its relation to the vegetative and endocrine systems is obvious. The injection of foreign proteins, locally or for general effect, is also an accepted method of treatment for alopecia areata. Its action is supposed to be that of restoring to normal an unbalanced vegetative nervous system.

Whether surgery as an operation on the vasomotor nerves of the scalp or about the blood vessels supplying the scalp could benefit the disease is a matter for experimentation.

BLOOD TRANSFUSION SYPHILIS

To the Editor:—A 22 year old white primipara was subjected to cesarean section because of cephalopelvic disproportion. Her antepartum blood Wassermann reaction was negative. Following the operation she received an indirect citrated blood transfusion from her cousin, who was a compatible donor. Owing to some neglect in the laboratory, the transfusion was done on the assumption that the donor was serologically negative. The error was noted on the following day, when a laboratory reported the donor's blood as positive for syphilis. On this day the recipient received 0.36 Gm. of nearsphenamine, three days later 0.45 Gm. of nearsphenamine, six days later two thirds Gm. of nearsphenamine, and then eight weekly injections of two thirds Gm. of nearsphenamine, with no reactions. A blood specimen of the recipient was then reported: Kline, two plus; Hinton, negative; Kahn \pm ; summary: doubtful serologic reaction for syphilis. The donor was subjected to two further blood tests, both returning as positive for syphilis. Close questioning as to primary or secondary manifestations revealed apparently no knowledge on the donor's part as to the time of the infection. I am assuming that he is in the latent asymptomatic stage. I should appreciate your criticism as to treatment and procedure followed and as to future handling of this case. The donor is now under active treatment with nearsphenamine and bismuth compounds. M.D., New York.

ANSWER.—In a situation as outlined it is possible that the donor has an old latent syphilis and that there is not so great a chance of transfer of the infection. There have been reports of transfusion syphilis from latent syphilitic donors, though some investigators are skeptical of this possibility.

As treatment has already been started there is only one course to follow; that is, treat the patient as if she had early syphilis. It is therefore recommended that she be given alternating, continuous courses of arsenicals and of bismuth compounds, using either mapharsen or nearsphenamine as the arsenical, preferably the former in 0.04 Gm. doses. They should be administered in a rapid manner intravenously and may be given every five days for a series of twelve treatments. Since a course of arsenic has already been given, immediately start weekly injections of bismuth subsalicylate. Make the first dose 2 cc. and thereafter 1 cc. of the 10 per cent oil suspension intramuscularly for a series of eight treatments. Follow these by a course of mapharsen, a succeeding course of bismuth subsalicylate and then another course of bismuth subsalicylate. Thereafter there should be another course of the arsenic and of the bismuth preparation. A serologic test should be made at the end of each course of therapy. Treatment should be kept up for one

year after the serologic tests are completely negative. Do a lumbar puncture at the end of one year. Thereafter do serologic tests every six months and a complete physical examination yearly for some years, together with a serologic check-up. Prognosis should be good when early continuous treatment is instituted.

TREATMENT OF NEUROSYPHILIS IN ARSENICAL SENSITIVE PATIENT

To the Editor:—A white married woman aged 46 is under treatment for neurosyphilis. She was first seen in April 1938 suffering from a slight left facial paralysis and complaining of frontal headaches, confusion, dizziness and a slight staggering gait. The essential positive physical signs included an Argyll Robertson pupil (right), positive Romberg sign and slight increase in patellar reflexes. Otherwise the entire examination was normal. The spinal fluid showed a 4 plus Kline and Kolmer reaction. The colloidal gold test showed a paretic type of curve, there were few cells and only a trace of globulin. From her history it appears that syphilis was contracted about twenty years ago. She was given malaria therapy and tryparsamide and injections of a bismuth compound for a period of three months in a private institution. During this time she recovered remarkably and appears perfectly normal from a mental and physical point of view. From Aug. 1, 1938, to Nov. 11, 1938, she had been given eight weekly injections of iodobismutol intramuscularly, nine weekly injections of tryparsamide (3 Gm.) in sterile distilled water intravenously (slowly) and occasional intravenous injections of sodium iodide, four in all. A rest period was given from November 11 to Jan. 26, 1939. Treatment from January 26 to May 23 consisted of nine weekly injections of tryparsamide (3 Gm.) with occasional injections of sodium iodide (2 Gm.) intravenously, three in all. From July to November 14 treatment consisted of four injections of tryparsamide intravenously, two injections of sodium iodide intravenously and seven injections of bismuth subsalicylate intramuscularly. The Wassermann reaction of the blood March 9, 1938, was 4 plus; spinal puncture July 19, 1939, showed a 3 plus Kolmer and 4 plus Kline reaction with no globulin and no cells and a normal colloidal gold curve. Difficulty in treatment was encountered in November 1938 a few minutes after the injection of 3 Gm. of tryparsamide in 10 cc. of distilled water intravenously. The patient experienced first a cough, then precordial pressure, puffing of the cheeks, eyes and a mild erythematous itching skin, and also an urgent desire to defecate. Five minims of epinephrine relieved the symptoms rather easily. Similar reactions occurred soon after the injection was started in May and in August 1939. The patient is in good health outwardly; her weight has increased from 148 to 165 pounds (67 to 75 Kg.); her general physical examination gave normal results, her urinary studies are normal and the eyegrounds are normal. The question arises as to whether these reactions are technical errors, overtreatment, plain nitritoid crises or sensitivity to tryparsamide. There have been no reactions to the iodide injections. She has had a partial loss of taste to all foods from the very beginning of the treatment. Should neoarsphenamine be used now, provided she gets no reactions, to try to reduce the Wassermann reaction of the blood and spinal fluid to normal, or would there be danger of a flare-up in the paretic symptoms?

M.D., Minnesota.

ANSWER.—It may probably be assumed, although the details given are insufficient, that the diagnosis was originally dementia paralytica. Treatment since the completion of malaria has included fifteen intramuscular injections of a bismuth compound and twenty-five injections of tryparsamide, to the last three of which she has developed a treatment reaction. The intravenous injections of sodium iodide may be discounted as being comparatively worthless. The postmalarial treatment has unfortunately been given by the intermittent rather than by the continuous system which would have been desirable. The question now arises as to the character of the reactions caused by the last three injections of tryparsamide and the desirability and type of further treatment.

The reactions to tryparsamide seem clearly to have been reasonably characteristic nitritoid crises. During the last few years this drug, which previously caused few or no constitutional reactions, has been observed to produce almost all the constitutional reactions customarily following the trivalent arsenical drugs. The reason for the change in the toxicity of tryparsamide is unknown, but it has been a matter of concern to the manufacturers. The question is editorially discussed in the *American Journal of Syphilis, Gonorrhea and Venereal Diseases* 23:398 (May) 1939. Since the patient has suffered repeated reactions of this type following tryparsamide, it is reasonable to assume that any further attempts to give the same drug will result in the same sort of reaction. The presence of an erythematous itching cutaneous eruption suggests that definite arsenical sensitization has occurred and that further attempts to give any arsenical drug, whether the pentavalent tryparsamide or the trivalent arsphenamines, may result in further and perhaps more serious reactions of the same type.

Since the patient has developed a complete remission following the original malarial treatment of dementia paralytica and since this remission has now been maintained for approximately twenty months, there are at least four chances out of five that even in the absence of any further treatment, and in spite of

the persistence of abnormal conditions in blood and spinal fluid, the remission will be permanent. A comparison of the clinical results of paretic patients treated with induced malaria alone without any subsequent chemotherapy, with those treated with induced malaria plus subsequent chemotherapy, indicates that the percentage of remissions from fever treatment is improved on only relatively slightly by following with chemotherapy. Many paretic patients treated only with malaria, without any subsequent chemotherapy of any sort, have maintained their complete remissions for indefinite periods.

The arsphenamines, whether neoarsphenamine or any other, are comparatively valueless in the treatment of dementia paralytica whether before or after fever therapy. In this particular case the risk of administering neoarsphenamine would seem to outweigh any possible benefits to be expected from it.

On the whole, and in spite of the persistent serologic reaction, it is probably safe to stop all treatment. The patient should be rechecked from physical and serologic points of view, including both blood and spinal fluid examinations, at six months' intervals for the next three to five years and thereafter at yearly intervals. Treatment need not be resumed unless there is evidence of serologic relapse in blood and spinal fluid or unless there is definite evidence of clinical relapse or progress, serologic or otherwise.

It is unnecessary and in many instances impossible to achieve serologic negativity in either blood or spinal fluid in well treated patients with dementia paralytica. Clinical and serologic outcome do not necessarily parallel each other; and mere persistence of positive laboratory examinations in blood or spinal fluid is not an indication for the continuation of treatment.

PARAPHENYLENEDIAMINE

To the Editor:—A patient who is working with paraphenylenediamine complains of a constrictive pain in his right chest aggravated when he has used this compound and absent when he refrains from its use over some period of time. What are the possible harmful effects? Is there any antidote that might be of use?

M.D., New Jersey.

ANSWER.—More is known about the dangerous properties of paraphenylenediamine as used in the fur and rubber industries than in photography. However, there is no reason to believe that this chemical is any less dangerous in photographic work when exposures are provided. Apparently paraphenylenediamine may be absorbed through the intact skin, may be present as a vapor in respired air and under some conditions may exert its action when present in the form of a dust. While it is a direct irritant, sensitization may account for the severity of symptoms in some cases. The commonest manifestation of injury is a dermatitis; urticaria and edema are well known. Frequently this is seen about the face and neck, but this manifestation is more often seen in the wearers of dyed furs. Asthma and bronchial edema are established features of the action of this chemical. It is possible that the discomfort mentioned in the query may represent inflammation and edema along the bronchial tree. Laryngitis, pharyngitis and bronchitis in the absence of characteristic asthma have been observed.

In the consideration of protective steps, the following may be helpful: 1. Elimination of this chemical if practical from the patient's photographic work. 2. Suitable rubber gloves should be worn whenever paraphenylenediamine is used in photographic baths. 3. An exhaust fan or system should be installed in the photographic chemical room to remove all unwanted volatile products. The application of patch tests with paraphenylenediamine solutions may throw some light on the possibilities of sensitization.

LEAD POISONING FROM NIPPLE SHIELDS

To the Editor:—I understand that the Department of Agriculture at Washington has banned the sale of lead nipple shields. These have been in use for many years. I am curious to know just why their sale is prohibited. Can you give me any information on this subject?

D. M. Caldwell, M.D., Manchester, Conn.

ANSWER.—It has been found that the use of lead nipple shields can cause lead poisoning in young nursing infants. Wilcox and Caffey were the first to report lead poisoning in infancy due to the use of lead nipple shields by the nursing mother. The clinical symptoms which they reported were vomiting, meningeal irritation and anemia. They found stippling of the red blood cells and changes in the spinal fluid, and they recovered lead in the excreta of the infants by chemical determinations. Rapoport and Kenney reported the occurrence of lead encephalitis in a breast-fed infant due to the use of lead nipple shields. Bass and Blumenthal recently reported a

fatal case of lead poisoning in a 4-months old infant due to prolonged use of lead nipple shields.

Among other causes of lead poisoning in young infants are face powders and ointments containing lead, which the mother may use on her skin. Lead incorporated in the glass of nursing bottles, lead-containing rubber nipples and toys painted with lead paint are other sources of lead poisoning in young infants.

Bass and Blumenthal reported that they were able to collect six cases of lead poisoning due to the use of lead nipple shields. They believe that many cases of lead poisoning due to the use of lead nipple shields are unrecognized.

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PAIN IN EPITHELIOMA OF TONGUE

To the Editor:—Kindly suggest the management of pain in a patient being treated for epithelioma of the side of the tongue. A man aged 60 developed a lesion on the left side of the tongue five months ago, which occasionally was spontaneously painful. A biopsy revealed pearl cell epithelioma. Following the biopsy the pain was more constant and more severe. At the clinic the lesion will soon be seeded and packed and the patient will receive the required roentgen therapy. Although he has also a myocarditis, compensation is satisfactorily held with a maintenance digitalis dosage. As the family physician, my problem here is the management of pain, already frequent and distressing at an early stage. The lesion is small enough to allow the specific therapy possibly to succeed in prolonging things. I desire, if the former result is accomplished, to avoid morphine addiction and, if the latter, to avoid reaching too high a tolerance. Other than the specific treatments for the lesion he now uses a peroxide mouth wash and small doses of morphine for the pain. Please advise any other regimen for the pain, either local or general, to be followed by the physician, the patient himself, or both.

M.D., New York.

ANSWER.—Codeine in adequate amounts is generally sufficient to control the pain associated with cancer of the tongue during and immediately after treatment. If the treatment proves unsuccessful, morphine or one of its derivatives will have to be used. Section of sensory nerves come up for consideration and a neurologic surgeon should be consulted on this aspect of the problem.

CARDIAC FLUOROSCOPY

To the Editor:—In cardiac fluoroscopy "adjacent opposite pulsations" are mentioned. Will you kindly tell me what the value of this landmark is in fluoroscopic work?
Edgar M. Johnson, M.D., New Haven, Conn.

ANSWER.—The expression referred to is not in general use, but presumably it refers to the opposing pulsations seen in the left border of the heart on either side of the auriculoventricular septum. These opposing adjacent pulsations permit one to mark the exact situation of the auriculoventricular septum, but they also serve to assist in the detection of cardiac aneurysms. When recognizable roentgenologically, they are seen to occupy the lower left lateral border, causing a rounded bulging at that point which has no or only indefinite pulsations, which do not have an orderly sequence and do not synchronize with the pulsations of the neighboring cardiac shadow. Paradoxical movements are sometimes observed, outward during systole, corresponding to a thrust which is sometimes palpable. Calcifications may be observed fluoroscopically in that vicinity also, with a dancing or jerking movement, depending on the exact site and morphology of the calcific deposits. These are but a few of the many phases of cardiac fluoroscopy.

DISABILITY AFTER SACRO-ILIAC FRACTURE

To the Editor:—A patient 7 years old suffered a fracture dislocation of the left sacro-iliac joint. The whole left side of the pelvis is about three-fourths inch higher than the right side. Aside from the deformity, which is being corrected with traction, what permanent disability may be anticipated following this injury?
M.D., Illinois.

ANSWER.—The age of the patient is favorable from the point of view of reduction and natural restitution of anatomic structures, but one cannot ignore the important factor of growth disturbances with unequal rate of development.

If the patient is a girl the obstetric factor must be considered. The anatomic considerations must include the left and right sacro-iliac joints, the lumbosacral joint and the symphysis pubis.

Some of the possible effects are an unstable pelvis, low back pain, sciatic radiation and pain and possibly scoliosis.

If the deformity is corrected, a perfect result may follow. If this is not accomplished it will be necessary to balance the pelvis by modification of the shoes, and it is possible that a fusion operation may eventually be the best form of treatment.

TRANSPLANTATION OF KIDNEY

To the Editor:—Please let me know what experimental studies have been made on the transfer or transplantation of a kidney from one animal to another of the same species. Has it ever been done successfully in man?
Roscoe B. G. Cowper, M.D., Big Springs, Texas.

ANSWER.—There has been a good deal of experimental work done on the transplantation of kidneys in animals. There is one report of transplantation in man which was done for anuria following mercury bichloride poisoning, but without success.

References:

- Carrell, Alexis: Animal Transplants, *J. Exper. Med.* 10:98, 1908.
Wu, P. P. T., and Mann, F. C.: Histologic Studies of Autogenous and Homogenous Transplants, *Arch. Surg.* 28:889 (May) 1934.
Dahl-Iverson, E.: Results of Homotransplantation, *Biblot. f. Lager.* 121:185 (May) 1929.
Williamson, C. S.: Some Observations on the Length of Survival and Function of Homogenous Kidney Transplants, *J. Urol.* 10:275 (Oct.) 1923.
Voronoy: Transplantation of Kidney from Cadaver as Therapy for Anuria Following Mercury Bichloride Poisoning, *Siglo med.* 97:296 (March 21) 1936.

DISSOLVING KIDNEY STONES

To the Editor:—I read an article in the paper the other day which indicated that sodium hexametaphosphate would dissolve kidney stones and that it was possible to take this drug internally. Can it be used therapeutically?
William T. Wildhaber, M.D., Beatrice, Neb.

ANSWER.—Sodium hexametaphosphate is an experimental drug which theoretically should dissolve calcium stones. However, the drug must be present in the urine at the concentration of 5 per cent to effect this result, but at this concentration there is severe renal pain and dysuria. It is not known what late complications, if any, may result from this irritation. Under no circumstances should the drug be used clinically until further study has been carried out.

RAT BITE AND RAT BITE FEVER

To the Editor:—A 2 months old baby was recently bitten by a rat. Is there any way to prevent rat bite fever in this case? If rat bite fever develops, what drug should I use, how much and how often? What is the prognosis?
Leonard T. Carlson, M.D., Minneapolis.

ANSWER.—Rat bite fever is a rare disease. For prophylactic treatment the actual cautery and the injection of 5 per cent phenol about the site of injury has been recommended.

The causative organism is a spirochete, and the infection should be treated with one of the arsphenamines. One injection of a dose suitable for the age of the patient has in some cases been found to be sufficient. The disease is more serious in children than in adults, but the outcome is usually favorable. The fatality rate for rat bite fever has been estimated at approximately 10 per cent.

It should be remembered that rat bite fever does not occur from the bite of a rat unless the rat itself is infected.

TWIN INJECTION TECHNIC OF VARICOSE VEINS

To the Editor:—In the Nov. 18, 1939, issue of *The Journal* I have just read in *Queries and Minor Notes* a question on the twin injection technic of varicose veins as described by Mr. Rodney Maingot, F.R.C.S. (Eng.). The answer given to the question—that the technic is "unnecessarily complicated and requires two operators"—is, in my opinion, not correct. As a former house surgeon of his, I had the opportunity on many occasions of seeing and myself performing his twin injection. The technic is as follows: Three syringes are first prepared, one containing 2 cc. of quinine urethane, one containing 1 or 2 cc. of sterile water, and one containing 2 cc. of lithocaine. With the patient standing, and using no tourniquet, the lowest part of the varicose vein to be injected is given the usual skin sterilization and 2 cc. of quinine urethane is injected. With the needle still in situ the syringe is disconnected; the one containing the sterile water is connected and 1 or 2 cc. injected to wash the needle of the contained quinine solution. With the needle still in situ, the syringe with the lithocaine is connected and 2 cc. of this solution is injected, the needle withdrawn and a small sterile pad applied to the skin. The reaction that takes place between the quinine and lithocaine solutions causes the formation of a gummy substance that readily occludes the vein and can best be demonstrated by pouring some lithocaine on a small amount of the quinine solution in a small dish. The twin technic is simple and requires one operator.

John A. Fowle, M.D., Santa Rosa, Calif.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examination of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, Jan. 13, page 183.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 5. Sec., Dr. W. W. Council, Box 561, Juneau. ARIZONA: Basic Science. Tucson, March 19. Sec., Dr. Robert L. Nugent, University of Arizona, Tucson.

ARKANSAS: Basic Science. May or June. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. Medical (Regular). Little Rock, June 6-7. Sec., Dr. D. L. Owens, Harrison. Medical (Eclectic). Little Rock, June 6-7. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, April 17. Written examination. Los Angeles, Feb. 26-29. Sec., Dr. Charles B. Pinkham, 1020 N. St., Sacramento.

CONNECTICUT: Basic Science. New Haven, Feb. 10. Chairman, Dr. Charles M. Bakewell, State Board of Healing Arts, 1895 Yale Station, New Haven. Medical. Hartford, March 12-13. Sec., Dr. T. P. Murdock, 147 W. Main St., Meriden. Homoeopathic. Derby, March 12-13. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Examination. Dover, July 9-11. Reciprocity. Dover, July 16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: Basic Science. Washington, April 22-23. Medical. Washington, May 13-14. Sec., Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Basic Science. De Land, May 25. Sec., John F. Conn, De Land. Medical. Tampa, June 17-18. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Joint-Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, April 2. Dir., Bureau of Occupational Licenses, Mr. H. B. Whittlesey, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Jan. 23-25. Acting Superintendent of Registration, Mr. Lucien A. File, Springfield.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Kansas City, June 18-19. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, June 5-7. Sec., Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, March 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Medical. Baltimore, June 18-21. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. Homoeopathic. Baltimore, June 18-19. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, March 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Ann Arbor and Detroit, June 12-14. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MISSISSIPPI: Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Jackson.

MONTANA: Reciprocity. Helena, April 1. Examination. Helena, April 2-3. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEVADA: Reciprocity with oral examination. Carson City, Feb. 5. Sec., Dr. Frederick M. Anderson, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, March 14-15. Sec., Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, June 18-19. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 8-9. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 29-Feb. 1. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

OREGON: Basic Science. Portland, Feb. 24. Applications must be on file not later than Feb. 7. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PUERTO RICO: Santurce, March 5. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

TEXAS: San Antonio, June 20-22. Sec., Dr. T. J. Crowe, 918-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 18-20. Sec., Dr. J. W. Preston, 30 1/2 Franklin Rd., Roanoke.

WEST VIRGINIA: Charleston, March 4-6. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Basic Science. Madison, April 6. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Feb. 5. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

Missouri October Examination

Dr. Harry F. Parker, secretary, State Board of Health of Missouri, reports the written examination held at Kansas City, Oct. 26-28, 1939. The examination covered fifteen subjects. An average of 75 per cent was required to pass. Twelve candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Rush Medical College.....	(1938)	88.8	(1939)
Harvard Medical School.....	(1939)	86.1	(1939)
Tufts College Medical School.....	(1936)	88.8	(1939)
University of Minnesota Medical School.....	(1939)	82.1	(1939)
Creighton University School of Medicine.....	(1937)	77.1	(1939)
Univ. of Pennsylvania School of Medicine.....	(1938)	85	(1939)
University of Texas School of Medicine.....	(1936)	82.9	(1939)
University of Western Ontario Medical School.....	(1936)	82.9	(1939)

University of Edinburgh Faculty of Medicine.....	(1938)	85.3
Universität Bern Medizinische Fakultät.....	(1938)	87.7

Thirty physicians were licensed by reciprocity and five physicians were licensed by endorsement on October 25 and December 9. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1937)	(1937)	Arkansas
University of Colorado School of Medicine.....	(1938)	(1938)	Colorado
Howard University College of Medicine.....	(1938)	(1938)	Tennessee
Northwestern University Medical School.....	(1938)	(1938)	Illinois
Rush Medical College.....	(1930)	Wisconsin	(1936)
University of Illinois College of Medicine.....	(1939, 2)	(1939, 2)	Illinois
Drake University College of Medicine.....	(1939)	(1939)	Iowa
State University of Iowa College of Medicine.....	(1931)	(1938)	Iowa
University of Kansas School of Medicine.....	(1938, 3)	(1938, 3)	Kansas
Louisiana State University Medical Center.....	(1938)	(1938)	Louisiana
Wayne University College of Medicine.....	(1939)	(1939)	Michigan
St. Louis University School of Medicine.....	(1938)	(1938)	New York
Creighton University School of Medicine.....	(1938)	(1938)	Nebraska
University of Nebraska College.....	(1938)	(1938)	Washington
Western Reserve University School.....	(1938)	(1938)	Ohio
McHarg Medical College.....	(1938)	(1938)	Tennessee
University of Tennessee College of Medicine.....	(1938)	(1938)	Tennessee
McGill University Faculty of Medicine.....	(1937)	(1937)	Tennessee

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
St. Louis University School of Medicine.....	(1938, 2)	(1938, 2)	N. B. M. Ex.
Creighton University School of Medicine.....	(1938)	(1938)	M. Ex.
Ohio State University College.....	(1938)	(1938)	M. Ex.
McGill University Faculty of Medicine.....	(1937)	(1937)	M. Ex.

Maine November Report

Dr. Adam P. Leighton, secretary, Maine Board of Registration of Medicine, reports the written examination held at Portland, Nov. 14-15, 1939. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Sixteen candidates were examined, thirteen of whom passed and three failed. Two physicians were licensed by reciprocity and three physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Boston University School of Medicine.....	(1935)	80	(1939)
Harvard Medical School.....	(1909)	80	(1939)
Tufts College Medical School.....	(1938)	76	(1939)
Albany Medical College.....	(1939)	83	(1939)
Columbia University College of Physicians and Surgeons.....	(1933)	75.6	(1934)
Hahnemann Medical College and Hospital of Philadelphia.....	(1939)	76	(1939)
University of Pennsylvania School of Medicine.....	(1939)	83.9	(1939)
University of Vermont College of Medicine.....	(1937)	78.8	(1937)
University of Western Ontario Medical School.....	(1932)	83	(1932)

School	FAILED	Year Grad.	Per Cent
Hahnemann Medical College and Hospital of Philadelphia.....	(1939)	70	(1939)
Medizinische Fakultät der Universität Wien.....	(1936)	72	(1936)
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia.....	(1937)	68.9	(1937)

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Pennsylvania School of Medicine.....	(1917)	(1917)	New Jersey
University of Vermont College of Medicine.....	(1937)	(1937)	Vermont

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard Medical School.....	(1931)	(1931)	N. B. M. Ex.
University of Edinburgh Faculty of Medicine.....	(1937)	(1937)	N. B. M. Ex.

Montana October Report

Dr. S. A. Cooney, secretary, Montana State Board of Medical Examiners, reports the written examination held at Helena, Oct. 3-4, 1939. The examination covered ten subjects. An average of 75 per cent was required to pass. Seven candidates were examined, all of whom passed. Eight physicians were licensed by reciprocity and two physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine.....	(1939)	79.7	(1939)
University of Minnesota Medical School.....	(1939)	77.8	(1939)
Creighton University School of Medicine.....	(1939)	77.1	(1939)
Cornell University Medical College.....	(1937)	82.4	(1937)
New York University College of Medicine.....	(1939)	86.8	(1939)
Medizinische Fakultät der Universität Wien.....	(1936)	75	(1936)

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine.....	(1936)	(1936)	Colorado
Indiana University School of Medicine.....	(1935)	(1935)	Indiana
Wayne University College of Medicine.....	(1936)	(1936)	Michigan
John A. Creighton Medical College.....	(1917)	(1917)	Nebraska
Duke University School of Medicine.....	(1935)	(1935)	Minnesota
University of Virginia Department of Medicine.....	(1931)	(1931)	Virginia
University of Montreal Faculty of Medicine.....	(1922)	(1922)	W. Virginia
Deutsche Universität Medizinische Fakultät, Prag.....	(1922)	(1922)	W. Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard Medical School.....	(1929)	(1929)	N. B. M. Ex.
University of Minnesota Medical School.....	(1937)	(1937)	N. B. M. Ex.

Book Notices

Brucellosis in Man and Animals. By I. Forest Huddleson, D.V.M., M.S., Ph.D., Research Professor in Bacteriology, Michigan State College, East Lansing. Contributing Authors: A. V. Hardy, M.S., M.D., Dr.P.H., Associate Professor of Epidemiology, DeLamar Institute of Public Health, Columbia University Medical School, New York, J. E. Debono, M.D., M.R.C.P., Professor of Pharmacology and Therapeutics, Royal University of Malta, and Ward Giltner, D.V.M., M.S., Dr.P.H., Dean of Veterinary Division and Professor of Bacteriology, Michigan State College. Cloth. Price, \$3.50. Pp. 339, with 41 illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1939.

This splendid volume is an outgrowth of an earlier work by Huddleson, published in 1934, entitled "Brucella Infections in Animals and Man." The previous book was restricted largely to methods of laboratory diagnosis. The present volume, about three times larger than the earlier book, deals extensively with the clinical aspects of brucellosis (undulant fever) and brings down to date the accumulated information on the pathology, bacteriology and serology of the disease in man and animals. The chapters dealing with the clinical aspects of brucellosis in the United States and brucellosis in Malta were contributed by Hardy, of Columbia University, and by Debono, of the Royal University of Malta. The chapter on the eradication or control of sources of brucellosis infection was written by Giltner, of Michigan State College. The senior author and the contributing authors are recognized authorities in their respective fields.

The difficulties often encountered in arriving at a clinical diagnosis of brucellosis are properly emphasized. A careful perusal of the chapters on brucellosis in human beings will convince the reader that the clinical picture of the disease, particularly during its acute and subacute phases, is often sufficiently characteristic to justify a provisional diagnosis of brucellosis in a high proportion of cases. The diagnosis can be made with absolute certainty only when the organism is recovered from the blood, urine, feces, spinal fluid or excised tissues. In the absence of positive cultures the agglutination test, intradermal test and opsonocytaphagic test are of considerable value when properly interpreted. The rapid agglutination procedure devised by Huddleson appears to be as reliable as the test tube method. The technics for the performance of the brucellergin skin test and the opsonocytaphagic test are described in detail. The occasional absence of serum agglutinins in culturally proved cases of brucellosis and the failure of the agglutination test and intradermal test to distinguish between past and present infection or between symptomatic and asymptomatic infection led Huddleson and his associates to test the opsonocytaphagic power of the blood in a phagocytic system as a measure of susceptibility, active infection or immunity. Huddleson has proposed a system for the diagnosis of brucellosis, in the absence of cultural proof, according to the results of a combination of the agglutination, intradermal and opsonocytaphagic tests. It is Huddleson's belief that such a system will determine the presence or absence of brucellosis and will distinguish between immune individuals and those actively infected. Some investigators do not place such reliance on the opsonocytaphagic test and have cited instances in which all three tests have failed in cases in which the diagnosis was established by culture of Brucella; the inadequacy of these tests pertains particularly to cases of low grade chronic brucellosis.

The chapter on treatment deals largely with the employment of brucellin, a culture filtrate of Brucella, devised by Huddleson. It is believed that brucellin favorably affects the course of the disease by producing a systemic allergic reaction which is accompanied by a neutrophilic polymorphonuclear leukocytosis and an increase in immune opsonins. Of more than 500 cases treated with brucellin the disease was favorably influenced in approximately 85 per cent. Sulfanilamide was ineffective in all of fifteen cases observed by the author. Vaccine therapy is dismissed with two sentences; many reliable investigators who have reported good results from vaccine therapy would undoubtedly take issue with the author on this score.

The growing realization during the past decade that brucellosis is a common, widespread and frequently unrecognized disease has created a demand for a complete, concise and authoritative

book on the subject. Huddleson and his collaborators have filled this need. The book will be read with great profit not only by physicians but by laboratory workers and veterinarians as well.

Manual de las enfermedades endocrinas y del metabolismo. Por G. Marañón, profesor de la Universidad de Madrid. Paper. Pp. 353, with 74 illustrations. Buenos Aires: Librería Hachette, S. A., 1938.

Dr. Marañón's textbook is not a comprehensive treatise on endocrine and metabolic disorders and does not pretend to be one. Its value lies in the critically written introductory chapters. In them the author analyzes the criteria necessary for the correct evaluation of a suspected endocrine disturbance from both the clinical and the laboratory point of view. He emphasizes especially the need for a healthy skepticism with regard to the hinterland of so-called subclinical endocrinopathies and the mixed, polyglandular syndrome. However Marañón, in common with some European clinicians, writes with positive assurance of "neuro-endocrine" syndromes, emphasizing the connection between the divisions of the autonomic system and the endocrines. We have far too little exact knowledge of such interrelationships at present to be able to do anything more than express vague generalities. The descriptions of the syndromes, their clinical course and the treatment, are accurate and concise. In general only well tested and potent endocrine preparations are recommended, and such materials as pituitary substance by mouth are expressly warned against. The illustrations on the whole do not add materially to the text. All the metabolic disorders occupy about fifty pages of text and the treatment is therefore sketchy and even more general than that usually found in textbooks on general medicine. Almost no attempt is made to elucidate the normal and deranged physiology of the food-stuffs in the light of modern biochemistry. On the whole the book demonstrates extensive clinical experience and a knowledge of the fundamentals of endocrine physiology but not of metabolism.

Injuries of the Nervous System Including Poisonings. By Otto Marburg, M.D., Clinical Professor of Neurology, Columbia University, New York, and Max Helfand, M.D., Assistant Clinical Professor of Neurology and Psychiatry, Columbia University. Cloth. Price, \$3. Pp. 213, with 16 illustrations. New York: Veritas Press, 1939.

This book is not easy to read. One must reread the sentences in order to get the thought that the writers wish to convey. Many of the sentences are wobbly. An example is on page 17: "It is not usual to speak of general signs in brain injuries, but there are many symptoms which are commonly found in concussion, contusion as well as in compression. So it seems to be right to call such symptoms 'general symptoms'." Or on page 16: "These projectiles are potentially restless in the brain and thus are a continuous source of infection." In reference to the subject of blood pressure, on page 23 the following sentence appears: "Blood pressure is seldom examined immediately following an injury." In well regulated hospitals the house staff is instructed to make routine blood pressure readings on all types of injuries. Thus, the foregoing sentence is not entirely correct. In the discussion on mental symptoms following trauma, on page 38 the following sentence in the last paragraph is of interest: "Undoubtedly a normal man with an intensive head injury tends to remain normal after the injury." It would be quite interesting to determine just what the authors meant by an intensive head injury or what is meant by "normal." On page 52, in the discussion of contusion and hemorrhages of the brain, the authors make the following statement: "As Kroenlein, we separate them into . . ." These are examples of how difficult it is to follow clearly the various thoughts that the authors discuss. Lastly, the subject of the effects of poisonings on the nervous system appears at the end of the book. On page 184 carbon monoxide is discussed; specifically the opening sentence, "The intoxication of carbon monoxide enters by respiration," is indeed a novel idea. It was believed that the intoxicant might enter, but not intoxication. Then the authors say "It is possible to substitute the oxyhemoglobin by CO hemoglobin . . ." It is not a question of substitution but the change of reduced hemoglobin to CO hemoglobin. Then the authors state that death by carbon monoxide poisoning occurs when 80 per cent of this poison is in the blood. The authors immediately go on and discuss a train of symptoms that the

patient complains of at a time when he is supposedly dead. On page 185 occurs a new paragraph—a discussion of the symptoms that a patient has when he recovers from the acute stage. It is, indeed, rather difficult to follow. There are many better books on diseases of the central nervous system and neuropathology, and various books on legal medicine and toxicology that contain superior discussions on injuries of the nervous system, as well as poisons. This book cannot be recommended.

Functional Disorders of the Foot: Their Diagnosis and Treatment. By Frank D. Dickson, M.D., F.A.C.S., Orthopedic Surgeon, St. Luke's, Kansas City General, and Wheatley Hospitals, Kansas City, and Rex L. Diveley, A.B., M.D., F.A.C.S., Orthopedic Surgeon, St. Luke's, Kansas City General, Research, and Wheatley Hospitals, Kansas City, Missouri. Cloth. Price, \$5. Pp. 305, with 202 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1939.

The first three chapters are an introductory foundation to the clinical picture and carefully but simply present the evolution, anatomy and physiology of the foot. Then follow the primary causes of foot imbalance and an unusually good chapter on foot examination. The next four chapters are on foot imbalance from infancy to adulthood. Each age group is presented, and the treatment discussed is basically logical and widely accepted. The discussion of foot apparel has real merit. Many of the disorders of foot function can be attributed to improper apparel. Most of the treatment requires proper foot wear for obtaining good therapeutic results. Clinical entities are then presented and the book closes with the chapters on adhesive strappings and exercises. The surgical treatment of flat foot, bunions, hammer toes and corns is excellent and the diagrammatic drawings are of great explanatory value. The entire subject of the foot is presented clearly and concisely. The book may be read by the public as well as by the medical profession. There are sufficient and adequate illustrations, photographs and roentgenograms to enlighten the reader and clarify the manuscript.

Über Sternalmark und Blut bei Wurmträgern (Bothriocephalus latus, Taenia mediocanellata). Von Guldo Tötterman. Acta medica Scandinavica. Supplementum CIV. Paper. Pp. 176, Stockholm, 1939.

This is a thorough study of the bone marrow and blood of 133 patients seen by the author in the hospital and his private practice in Helsinki. Of these, twenty-two (eleven males and eleven females) were considered normal. There were 111 with tapeworms, of whom eleven were infected with *Taenia saginata* and 100 with *Diphyllobothrium latum*. Of the latter, twelve had anemia (pernicious). Of the eighty-eight carriers, sixty-four were females and twenty-four males; of the patients with anemia, seven were females and five males. Of the patients infected with *Taenia saginata* there were two males and nine females. The author was able to study many of the cases before and after treatment. The monograph has many tables showing the results of studies on blood and bone marrow (sternal puncture).

In general, Tötterman concludes that the type of erythropoiesis in carriers of the broad tapeworm is normoblastic with a slight reduction in numbers of normoblasts in the bone marrow and some slight decrease in reticulocytes. Some slight shift to the left of the neutrophils might be accounted for by the infection. These changes are very slight and are probably not significant. When hypochromic anemia occurred in these cases, the normoblasts were not increased nor were the eosinophils. In patients having "bothriocephalus anemia," the erythropoiesis was found to be megaloblastic and promegaloblastic and typical of pernicious anemia.

In general, in carriers the blood changes are slight; there is a slight increase in diameter of the erythrocytes, an insignificant increase in eosinophils and a weak tendency toward leukopenia. In 14.8 per cent of the cases it is likely that the infection produced a slight anemia and also a tendency toward a higher color index. One could not regard these carriers as suffering from pernicious anemia.

The frequency of achylia in patients with slight blood changes was not greater than those without such anemia. In seven cases there was lowering of the color index, and the anemia was not improved after treatment. The volume index and serum color index of Meulengracht were normal in carriers. The urine of many, however, contained urobilinogen and urobilin, which the author thinks was due to slight hepatic damage and not to action of a hemolytic toxin. The patients who had "bothriocephalus anemia" appeared to be ill, like patients who had pernicious

anemia, and quickly improved after treatment. Their achylia did not respond to injections of histamine.

The patients harboring the beef tapeworm had more eosinophils in both bone marrow and blood than those harboring the fish tapeworm. Erythropoiesis was not much influenced by the infection. The author does not think it wise to draw too positive conclusions about this worm on the basis of so few patients, most of whom were of one sex. Of the patients, 36.3 per cent had achylia.

There is a discussion of the relationship of pernicious anemia to the anemia described as afflicting persons infected with *Diphyllobothrium latum*, but no definite conclusions are given. It is unfortunate that the author did not consult some standard textbook on helminthology for the correct names of the worms which concerned him in this study.

Handbook of Physical Therapy. Selections Authorized for Publication by the Council on Physical Therapy, American Medical Association. Third edition. Cloth. Price, \$2. Pp. 537, with illustrations. Chicago: American Medical Association, 1939.

The third edition of the Handbook of Physical Therapy contains articles authorized by the Council on Physical Therapy of the American Medical Association. This handbook has been important in making the general practitioner conscious of the value of physical therapy. It has become a standard work, for it has been tried and its value assayed. This edition contains eleven new articles and revisions of many that appeared in previous editions. There are two new articles on short wave diathermy. Galvanic and faradic currents are discussed. There is an article on electrolysis that will be of interest to the dermatologist. New material has been added on all forms of radiation therapy. Fever therapy is discussed fully with regard to indications and contraindications, qualifications of personnel and team work. There is a fine article by Krusen on colonic irrigation and another on electrosurgery by Mock. The illustrations of the warm paraffin bath and the home type of baker are especially instructive. The physiologic effects of heat are well described and illustrated in Pemberton's chapter. Some of the noteworthy features of the book are the value of physical therapy in fractures, poliomyelitis, psychiatric and other neurologic conditions, tuberculosis, surgery, and medical and orthopedic lesions.

The 1939 Year Book of Radiology. Diagnosis. Edited by Charles A. Waters, M.D., Associate in Roentgenology, Johns Hopkins University, Baltimore. Associate Editor: Whitmer B. Flror, M.D., Assistant in Roentgenology, Johns Hopkins University. Therapeutics. Edited by Ira I. Kaplan, B.Sc., M.D., Director, Division of Cancer, Department of Hospitals, City of New York. Cloth. Price, \$4.50. Pp. 528, with 509 illustrations. Chicago: Year Book Publishers, Inc., 1939.

Again Waters and Kaplan have turned out a good Year Book of Radiology. A set of these year books and the Consolidated Indices of the *American Journal of Roentgenology and Radium Therapy* would be an economical and practical method of contracting the shelf space for the radiologic literature of the world for the last eight years to just nine volumes. Look up the author or article and within the same or the succeeding year book will undoubtedly appear a condensation of the original article with editorial exactness and comment. Naturally, the Year Book does record all of the newer applications of x-ray diagnosis and roentgen and radium treatment. The advancements in physics and artificial radioactivity are never neglected. The amplification and experience of older procedures, as recorded in the radiologic literature of the world, are offered for those who must have a short cut to reliable information. Economics as it touches the field of radiology receives generous attention. No other set of books could be more useful to the busy or studious radiologist. He can refresh his memory or restore his recollection of forgotten items. In an instant, during the preparation of a consultative report to a colleague, the radiologist can offer authoritative background to establish the diagnosis or the usefulness of certain suggestions for treatment. There can never be too much praise for the manner in which Waters and Kaplan have constructed the Year Book of Radiology for the entire eight years of its existence. Never has there been any criticism among other radiologists who follow the literature of the radiologic world. Waters and Kaplan have constantly been generous in space for the newer concepts of radiologic practice. They have never been guilty of deleting articles that run contrary to their beliefs. They have always recorded articles on

radiology by other than radiologists; in fact, there is comment in the preface on the large number of such articles within the past year. An index for any year book does require many cross references. Evidently the editors realize this and have induced the publishers to be generous in this section of the book. The perpetuation of any year book depends on a satisfactory return in profit and recognition to the publishers. Those radiologists who find this annual volume useful should spread an interest so that it may be continued without interruption throughout the years.

Fractures and Dislocations in General Practice. By John Hosford, M.D., F.R.C.S., Assistant Surgeon to St. Bartholomew's Hospital, London. Cloth. Price, 12s. 6d. Pp. 274, with 71 illustrations. London: H. K. Lewis & Co., Ltd., 1939.

The author has written this book for the general practitioner and the undergraduate medical student in order to give them a practical, easily read book. He purposely omits details of open operations on fractures and skeletal traction. He gives the methods which he considers best instead of giving many methods which might be confusing to the doctor. It is a guide to simple anatomic, physiologic and mechanical principles involved in the treatment of fractures and dislocations. The illustrations are well chosen. There are instructive chapters on plaster of paris, continuous traction, delayed union and nonunion, complications and other forms of treatment. The author includes an interesting illustration of Monteggia's dislocation of the head of the radius with fracture of the shaft of the ulna. The appendix contains four pages on some of the pioneers in the field such as Percival Pott, Abraham Colles, Robert William Smith, Hugh Owen Thomas and Edward Hallaran Bennett. The book is satisfactory for both the student and the general practitioner.

Office Gynecology. By J. P. Greenhill, B.S., M.D., F.A.C.S., Professor of Obstetrics and Gynecology, Loyola University Medical School, Chicago. Cloth. Price, \$3. Pp. 406, with 106 illustrations. Chicago, Illinois: Year Book Publishers, Inc., 1939.

Even those who are wearied by the large number of gynecologic textbooks will admit that there is a field for such a book as this, which concisely collects and summarizes the several current gynecologic procedures which can be performed in the office. The author states in the preface that the purpose of the book is to present to the physicians who cannot conveniently avail themselves of postgraduate study the recent phases of gynecology that may suitably be practiced in the office. Following a brief but readable review of history taking and physical examination, the various medical entities of gynecology as well as minor surgical procedures are discussed. Some of the procedures mentioned may be a bit too ambitious to be carried out as a routine in the office except when hospitalization is not feasible for sound reasons. The various diagnostic and therapeutic technics are well outlined by the author and deserve space in the book. It is doubtful, however, whether such procedures as pneumo operations and sterilization by coagulation of the uterine cornu will be employed frequently enough by the general practitioner to warrant separate chapters. The value of sulfanilamide in gonorrheal and nongonorrheal pelvic infections has possibly been underestimated but the dangers and complications of its use are adequately stressed, except to warn that close hospital observation is sometimes required. Pelvic heating in inflammatory disease receives due attention. There is admirable clarity in reference to dose, percentage of solutions, timing of doses and other therapeutic detail. The survey of the recent advances in endocrinology is handled as well as the limited space permits. Therapeutic suggestions in this phase of gynecology are wisely less dogmatic because of the flux and shift of our knowledge in this rapidly changing field. It is acknowledged that some of the newer endocrine therapeutic agents mentioned have not been proved innocuous and that the physiologic basis for their administration has not been confirmed. A generous number of illustrations clarify various procedures and the book is pleasantly free from unessential bibliographic references. The book ends with a chapter on premarital advice—a subject largely heretofore neglected in such works. In critically perusing this chapter one must keep in mind that it is not written for the public but for the doctor about to instruct the patient. The author has been both concise and inclusive. The book should prove to be a useful "refresher course" for the physician interested in gynecology.

From Head to Foot. By Armitage Whitman, M.D. Cloth. Price, \$2.50. Pp. 282. New York & Toronto: Farrar & Rinehart, Inc., 1939.

The author is well qualified to write "From Head to Foot," which is a practical discussion of the more frequently encountered orthopedic conditions. Separate chapters are devoted to a consideration of posture, the foot, scoliosis, poliomyelitis, spastic paralysis, fractures, joint injuries, osteomyelitis and low back pain. A clear clinical picture is presented to the reader in simple, nontechnical language; at the same time the difficulties which the physician encounters in diagnostic and therapeutic problems are discussed in a frank and sympathetic manner. The chapters on influences of a handicap, physical therapy, social service and veterans deal with the psychological, sociologic and economic aspect of disease. The literary style is informal and conversational. Frequently emphasis is established by use of illustrative dramatic episodes from the author's experience. This volume is recommended for the layman's medical library.

Röntgendiagnostik der Wirbelsäule. Von Dr. B. Simons, Dozent für Chirurgie und Orthopädie, Oberarzt der chirurgischen Universitäts-Klinik, Jena. Paper. Price, 24 marks. Pp. 262, with 207 illustrations. Jena: Gustav Fischer, 1939.

This monograph includes descriptions and illustrations on the growth and development of the vertebrae. The relation of the intervertebral disks to adolescent kyphosis is discussed and anomalies and variations of position, shape and size are shown. The x-ray appearances of abnormal growth and development are shown and the interpretation of vertebral tumors, diseases and deformities are discussed and illustrated. The author describes the lesions of tuberculosis, pyogenic infections and arthritis as well as osteoporosis, osteitis deformans and chondrodystrophy. Some of the illustrations of Schmorl and Junghanns are well shown. The reproductions of the roentgenograms, photographs and pathologic material are beautiful. Disturbances of growth and development are well illustrated, also cervical ribs, spina bifida, anomalies of the articular facets, fifth lumbar vertebrae, calcification of the liliolumbar ligaments, rachischisis, neoplasms and almost every pathologic lesion that occurs in the vertebrae. There is an extensive bibliography. This fine monograph should be of teaching value to those interested in this subject.

Untoward Effects of Nitrous Oxide Anesthesia With Particular Reference to Residual Neurologic and Psychiatric Manifestations. By Cyril B. Courville, M.D., Professor of Neurology and Psychiatry, College of Medical Evangelists, Los Angeles, California. With foreword by Dr. Vandell Henderson, Professor of Applied Physiology, Yale University, New Haven, Connecticut. Cloth. Price, \$4.75. Pp. 174, with 54 illustrations. Mountain View, California: Pacific Press Publishing Association, 1939.

This monograph sets forth the residual neurologic and psychiatric manifestations of asphyxia associated with nitrous oxide anesthesia, along with the pathologic proof as evidenced by the cells of the various parts of the nervous system. It is a valuable contribution for anesthetists and the excellent presentation of the subject should be read not once but annually by all anesthetists, more especially by those who administer inhalation anesthetics such as nitrous oxide.

Nutrition and Physical Fitness. By L. Jean Bogert, Ph.D. Third edition. Cloth. Price, \$3. Pp. 602, with 75 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

When this book first appeared, in 1931, it became immediately popular with readers who wanted accurate information about foods and nutrition written in an interesting and nontechnical style. The present edition preserves these attributes while bringing the information down to date. The author writes authoritatively about nutrition and health in terms which the intelligent man or woman can understand.

Manual of Toxicology. By Forrest Ramon Davison, M.B., M.Sc., Ph.D., Assistant Professor of Pharmacology, College of Medicine, University of Vermont, Burlington. With a foreword by David Marvin, M.D. Cloth. Price, \$2.50. Pp. 241. New York: Paul B. Hoeber, Inc., 1939.

As a proof that this book is right up to date may be offered the inclusion of war gases among the poisons. In many other ways the manual impresses one as a thoroughly satisfactory textbook for a course in toxicology in medical schools or as a desirable ready reference book to be recommended for the smallest hospital library.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Compensation of Physicians: Criteria of Reasonableness of Fees.—The plaintiff, June 12, 1936, was called to attend the defendant, who was suffering from bronchial pneumonia, and the patient was immediately hospitalized. On the patient's insistence, the plaintiff occupied an adjoining room in the hospital and was in constant attendance on him, leaving the hospital only once or twice a week for a change of clothes. Apparently the patient had a difficult time of it but eventually recovered sufficiently to permit his removal from the hospital July 5 to a sanitarium in an adjoining county for further care and treatment. For the twenty-three days that the plaintiff attended the defendant at the hospital a charge of \$12,000 was made, which the defendant refused to pay. The plaintiff then sued and obtained a judgment for the full amount, whereupon the defendant appealed to the district court of appeal, fourth district, California.

Testimony tending to show a patient's ability to pay, said the district court of appeal, was admissible. The value of professional services rendered by physicians is not a subject of general knowledge or within the scope of judicial notice, and proper proof as to such value requires the testimony of those familiar as experts with such work in a particular locality. A physician is entitled to recover the ordinary and reasonable charge usually made, for such services as he has rendered, by members of similar standing in the profession. There is a difference between ability to pay and annual net income, the court pointed out. While annual net income may be in such an amount that, when related to the fee claimed, proof thereof would establish the ability to pay the fee, usually annual net income is evidence only of ability to pay and therefore is one element to be properly considered in determining what is the reasonable value of services performed. Fixing the value of services must be in the light of other elements than ability to pay, such as professional standing, capacity and reputation of the person performing the services. The capabilities of the physician as measured by all the elements that go into the demand for his personal services must be taken into consideration, as well as the difficulties of the case and the amount of time necessarily occupied in its consideration. A physician who has just been licensed to practice could not have established within a community public opinion or demand for the services that would justify a charge equivalent to a charge that would be made by a physician who had been in practice for a long time and who had acquired a national reputation. If a physician possesses a rare gift in the matter of his professional accomplishments and the demand for his time and services become great, he is entitled to a greater compensation than a physician who has no such gift and for whose services there is no such demand.

In the present case, the plaintiff was a general practitioner with no special training or experience in the treatment of pneumonia. A physician from a neighboring county testified as an expert witness for him. He was familiar with the various methods used by physicians in determining just and fair charges for services rendered but stated that he had never practiced in the county in which the plaintiff rendered the services involved in this case and knew nothing of the practices and customs of physicians there. The following hypothetical question was propounded to this witness:

Doctor, assume that the patient is a man 56 years of age suffering from Paget's disease, and a man who . . . was taken with bronchial pneumonia, the patient being a prominent motion picture star with a reputed income of \$6,000 a week and with an accumulated surplus in the neighborhood of \$700,000, the doctor in attendance being in constant attendance on the patient day and night from June 12, 1936, to July 5, 1936, and

the patient having made a complete recovery from the pneumonia, what would in your opinion be a fair and reasonable charge for the services rendered by the physician?

Over objections the witness was permitted to answer: "somewhere between 5 or 10 per cent of the [annual] net income" of the patient. This witness, said the district court of appeal, having no knowledge of the customs and practices of the profession in fixing the reasonable value of services in the locality in which the services were rendered, was not competent to express an opinion concerning what would be a reasonable fee under the circumstances. The trial court erred, therefore, in permitting the witness to express an opinion. Furthermore, the hypothetical question itself was faulty. It assumed that the defendant's income was \$6,000 a week. While it appeared from the record that at one time he did receive that salary, it was discontinued on June 1, 1936. The hypothetical question, too, left out of consideration the important matters of training, skill, experience and professional standing of the plaintiff and further assumed that the defendant was a prominent motion picture star, without any evidence to support it. The vocation of the defendant was not an element, the court pointed out, in the fixing of a reasonable charge against him; such charge would be the same whether he was a motion picture star, a banker or a rancher.

The trial court, furthermore, refused to permit the defendant to show by an examination of the plaintiff what the latter's earnings were for the three years immediately preceding 1936 and what were his customary charges for calls and services to patients. The value of professional services, the district court of appeal pointed out, may depend very considerably on the character and standing of him who performs them. In the first place, there are diversities of gifts. The period of time passed in the profession, the experience acquired, the degree of skill and the faculty of using professional knowledge make great differences in individuals. The services of some are worth more than the services of others because they will command more. The professional standing of the plaintiff was one of the elements properly to be considered in determining the reasonable value of the services that he rendered. His earnings and his customary charges were proper subjects of inquiry to aid in determining his professional standing and the reasonable value of his services. In the opinion of the court, the testimony as to his earnings and his customary charges during a reasonable period prior to the rendering of the services should have been admitted.

Because of the errors committed by the trial court, the judgment for the plaintiff was reversed.—*Citron v. Fields (Calif.)*, 85 P. (2d) 534.

Society Proceedings

COMING MEETINGS

- American Academy of Orthopedic Surgeons, Boston, Jan. 21-25. Dr. Carl E. Badgley, 1313 East Ann St., Ann Arbor, Mich., Secretary.
- American Orthopsychiatric Association, Boston, Feb. 22-24. Dr. Norville C. La Mar, 149 East 73d St., New York, Secretary.
- American Physiological Society, New Orleans, March 13-16. Dr. Philip Bard, Johns Hopkins Medical School, Baltimore, Secretary.
- American Society for Experimental Pathology, New Orleans, March 13-16. Dr. Paul R. Cannon, Dept. of Pathology, University of Chicago, Chicago, Secretary.
- American Society for Pharmacology and Experimental Therapeutics, New Orleans, March 13-16. Dr. G. Philip Grabfield, 319 Longwood Ave., Boston, Secretary.
- Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. W. D. Cutter, 535 North Dearborn St., Chicago, Secretary.
- Mid-South Post-Graduate Medical Assembly, Memphis, Tenn., Feb. 13-16. Dr. A. F. Cooper, Goodwyn Institute Bldg., Memphis, Tenn., Secretary.
- North Pacific Pediatric Society, Portland, Ore., Jan. 27. Dr. J. S. Backstrand, 388 State St., Salem, Ore., Secretary.
- Society of Surgeons of New Jersey, Camden, Jan. 31. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.
- Western Section, American Laryngological, Rhinological and Otolological Society, Los Angeles, Jan. 26-27. Dr. Pierre Vuile, 1936 Wilshire Blvd., Los Angeles, Chairman.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

58: 931-1156 (Nov.) 1939

- *Control of Impetigo. R. G. Flood, San Francisco.—p. 931.
- Assimilation of Protein by Young Children with Nephrotic Syndrome: II. Effect of Dietary Fat and Carbohydrate on Nitrogen Balance. L. E. Farr, New York.—p. 935.
- Id.: III. Effect of Nephrotic Crises on Assimilation of Nitrogen. L. E. Farr, New York.—p. 939.
- Rate of Appearance of Ossification Centers from Birth to Age of 5 Years. L. W. Sontag, Dorothy Snell and Margaret Anderson, Yellow Springs, Ohio.—p. 949.
- Basal Metabolism of Tuberculous Children: IV. Children with Pneumothorax. Anne Topper and H. S. Rubin, New York.—p. 957.
- Factors Affecting Retention of Nitrogen and Calcium in Period of Growth: I. Effect of Thyroid on Nitrogen Retention. J. A. Johnston and J. W. Maroney, Detroit.—p. 965.
- Exanthema Subitum (Roseola Infantum). L. H. Barenberg and L. Greenspan, New York.—p. 983.
- *Role of Advancing Maternal Age in Causing Achondroplasia. A. Bleyer, St. Louis.—p. 994.
- *Obesity in Childhood: II. Basal Metabolism and Serum Cholesterol of Obese Children. Hilde Bruch, New York.—p. 1001.
- Air Contamination and Air Sterilization. E. C. Robertson, M. Elizabeth Doyle, F. F. Tisdall, Toronto; L. R. Koller, Schenectady, N. Y., and F. S. Ward, Toronto.—p. 1023.
- *Immunologic Properties of Scarletina Convalescent Serum. Elizabeth Moore and W. Thalheimer, New York.—p. 1039.
- Role of Acid-Soluble Phosphorus Compounds in Red Blood Cells in Experimental Rickets, Renal Insufficiency, Pyloric Obstruction, Gastro-Enteritis, Ammonium Chloride Acidosis and Diabetic Acidosis. G. M. Guest and S. Rapoport, Cincinnati.—p. 1072.

Control of Impetigo.—After using several technics for washing nursery nurses' hands so as to control impetigo, Flood states that the following procedure proved effective and simple: When the nurse reports for duty she has a regular surgical scrub for five minutes before entering the nursery. This is the only soap and water wash that she uses while in the nursery. However, before and after handling any infant she submerges the hands up to the wrists in 5 per cent. compound solution of iodine, counting to ten during the procedure. She then places her hands in a basin containing a saturated solution of sodium thiosulfate. The hands are left in this basin until the brown of the iodine has entirely disappeared. This requires about five seconds. She then proceeds to service the infant with wet hands. The effectiveness of the iodine solution was compared with that of soap and water and of water, soap and alcohol. It was found that simple washing of the hands with soap and hot water, although continued for two minutes, was ineffective. The surface film on the hands produced by the water, soft soap and alcohol was not as sterile as previously believed, and the underlying surface was moderately infectious after it had been thoroughly scrubbed. The hands treated with compound solution of iodine had a minimum of infection both after soaking and after scrubbing. While the hands were not sterile, experience bears out that they were clean enough to prevent the spread of impetigo. Strict individual crib technic was not sufficient to check outbreaks. The advantages of the procedure are that it is practical, it is apparently effective, it is not detrimental to the nurses' hands (in fact it keeps them soft) and it is inexpensive. The solution should be changed every eight hours. The disadvantage of the technic is that the iodine solution is highly volatile. The walls and ceilings become moderately discolored and any exposed metal, including stainless steel and chromium (except monel metal), becomes tarnished. Therefore all exposed surfaces, except the individual crib and service tables, which were of monel metal, were enameled. The terrazzo floors are corroded by the iodine solution, but this damage was minimized by keeping heavy linoleum, which is impervious to iodine,

under the basins. The technic has simplified nursery procedure. It is no longer necessary to repaint cribs and nursery walls when a sporadic case of impetigo occurs, which, incidentally, the author believes to be of maternal origin. The infant is moved from the nursery, the crib and bedding are sterilized and the nursery procedure goes on as usual, except that for the next week the solutions are changed every six hours.

Maternal Age and Achondroplasia.—In an attempt to determine the effect of maternal age as the cause of achondroplasia, Bleyer found only forty-seven cases in a review of the literature in which the age was mentioned or could be obtained from the author; and in sending letters to heads of pediatric and occasionally orthopedic departments of many schools and hospitals in this country and Canada he obtained data on 256 additional cases. The basis used for comparison of the mothers' ages at the birth of the achondroplastic children was the total number of living births in the registration area of the United States in the four years 1919, 1924, 1929 and 1934, about 7,500,000. The number of births and the respective percentages for each of the seven quinquenniums of maternal age from 15 to 49 years and percentages among the births of achondroplastic children were studied. It was found that young women from 15 to 19 years of age contribute 6.6 per cent of the achondroplastic children. The normal expectancy of births in this age period is 10.95 per cent. Subtracting 6.6 from 10.95 leaves 4.35, which is 39.72 per cent of 10.95. This percentage represents the degree of protection against the birth of an achondroplastic child for women of this early age in this particular group. This is the lowest point for the entire reproductive period. In the next quinquennium the incidence of achondroplastic children rose sharply to 19.8 per cent. The normal expectancy in this period of births is 29.14. The percentage of protection against the birth of a defective child in this age group declines to 32.05 per cent. In the quinquennium from 25 to 29 years, 28.38 per cent of these abnormal births occurred. Since the normal expectancy for this period, 26.51 per cent, is below the percentage for births of achondroplastic children, the relatively safe period has come to an end; the figure for births of afflicted children is 7.05 per cent above the expectancy. Women from 30 to 34 years of age contributed 24.09 per cent of the achondroplastic births. The expectancy in the general population has now fallen to 18.2 per cent. The trend toward achondroplasia has risen to a point 32.36 per cent above the expectancy. In the 35 to 39 year period occurred 14.19 per cent of the births of achondroplastic infants, which may be set against a norm of 11.28 per cent. Women from 40 to 44 years of age contributed 5.94 per cent of the births of achondroplastic children, against a norm of 3.52 per cent, a rise to a point 68.75 per cent above the expected figure. The group of mothers from 45 to 49 years of age contributed 0.99 per cent, as against a norm of 0.36 per cent, the advantage in favor of birth of an achondroplastic child being about 175 per cent. As with mongolism, the play of maternal age in cases of achondroplasia appears to start at or soon after the beginning of the reproductive period and increases steadily to its end. Therefore it appears that the risk of bearing a child with either of these anomalies increases, if only by a little, with the passing of each menstruation. "Advancing" rather than "advanced" maternal age is the term to be preferred in designating this factor. Whether in these situations maternal age is in itself a cause of the defects or whether it is coincidental with another factor, as yet undetermined, is of course unknown.

Basal Metabolism and Serum Cholesterol of Obese Children.—The correlations calculated from a study of the serum cholesterol determinations and metabolic rates of seventy-two obese children lead Bruch to the conclusion that basal metabolism rates as ordinarily carried out and as conventionally reported are an untrustworthy guide when the clinician is seeking to estimate the part played by the thyroid in the pathogenesis of obesity. Lack of relation between the serum cholesterol concentration and the basal metabolic rate computed from different standards is strong evidence against the assumption that hypothyroidism plays an important part, if any, in the pathogenesis of simple obesity. The failure of thyroid

medication and of its withdrawal to influence the cholesterol level is additional support for this conclusion.

Immunologic Properties of Scarletina Convalescent Serum.—Moore and Thalhimer state that the antitoxin in fifty-one convalescent scarlatina serums, determined by titration of the toxin-serum mixtures in the skin of rabbits, ranged from less than 1 unit (United States standard) to 10 units per cubic centimeter, and 39 per cent of the serums contained between 2 and 4 units per cubic centimeter. The average value of antitoxin in the fifty-one samples was 3.3 units per cubic centimeter. A slight diminution in titer generally occurred in successive samples of serum obtained from one and one half to six months after onset of the disease. The bactericidal activity for one or more of the types of streptococci of seventy convalescent serums studied showed that forty-two (60 per cent) had a demonstrable effect on one or more of the types. Twenty-eight of the serums (40 per cent) failed to react with any of the strains tested. In order to obtain a polyvalent serum for the treatment of scarlet fever and streptococcal infections, it appears advisable to pool specimens of serum taken from a large number of patients recently recovered from scarlet fever.

American Journal of Hygiene, Baltimore

30: 63-96 Section A (Nov.) 1939. Partial Index
83-158 Section B 81-124 Section C 73-122 Section D

Section A

- *Decline of Tuberculosis Mortality in Specific Age Groups in the United States and Absence of This Decline in Young Women After the World War. G. Wolff, Baltimore.—p. 63.
- True Growth of the Negro Population in the United States. B. D. Karpinos, Washington, D. C.—p. 79.
- Age Selection of Mortality from Tuberculosis in Successive Decades. W. H. Frost, Baltimore.—p. 91.

Section B

- Leukocidal Toxin Extracted from Typhoid Bacilli. E. W. Dennis and H. Senekjian, Beirut, Lebanon, Syria.—p. 103.
- Immunizing Potency of Antirabies Vaccines: Critical Review. L. T. Webster, New York.—p. 113.
- Study of Hazard from Tubercle Bacilli in Environmental Air. R. P. Sinn and F. B. Flinn, New York.—p. 135.

Section C

- Attempts to Obtain Passive Immunity in Avian Malaria with Blood Serum and Spleen. R. Hegner and Marian Dobler, Baltimore.—p. 81.

Section D

- Seasonal Incidence of Infestation of Snail Hosts with Larval Human Schistosomes. C. H. Barlow, Cairo, Egypt.—p. 73.
- Observations on Infection with Common Roundworm, *Ascaris Lumbricoides*, in Egypt. J. A. Scott.—p. 83.

Tuberculosis Mortality in Young Women After World War.—Wolff states that the examination of tuberculosis mortality in the United States by age and sex, the differential decline of the death rates at different ages and particularly the lack of decline in young women seems to suggest that there are some general connections between the population factor (population movement) and mortality from tuberculosis all over the world. The decline of the birth rate is an international phenomenon as that of mortality from tuberculosis. If there is a certain correlation between the fall in the birth rate and mortality from tuberculosis at all ages as shown for the period between 1906 to 1910 and 1926 to 1930 for fifteen different countries, the coefficient of correlation being as much as 0.52, then it seems to be still more probable that a closer relation exists between birth rate and tuberculosis of those persons and ages directly concerned in childbirth, i. e. young women. It is not yet possible to give a mathematical expression of this correlation between fertility rates of women at ages 15 to 19, 20 to 24 and 25 to 29, and tuberculosis death rates at the same age group within a certain period of years, for want of sufficient data; but the author believes that a close connection seems obvious enough from his figures. If young women, especially those from 15 to through 29 years of age, always show a strikingly higher tuberculosis mortality than young men and women at higher ages, it is rather suggestive to suppose that the level of these specific death rates is in close connection with maternal activity. It seems to be a natural explanation that the much discussed phenomenon of a real increase of tuberculosis mortality among young women (as in England and other European countries) or at least a slowing down in the decline (as in the United States) was caused first by a transitory rise of the birth rate immediately after the war,

and secondly by the relatively smaller decrease of first and second births as compared with later births. So it happens that the risk of young women has not diminished in the same degree as that of older ones. Of course, the general level of tuberculosis has decreased, especially in the last years of the study. The task to diminish further the great risk of young women from tuberculosis mortality during years of increased generative and maternal activity is a medical one, but not one to be solved by preventing pregnancies in young women but by alleviating the dangers connected with child bearing and by improving the external conditions during this time. Finer statistics by age and sex and their medical interpretation may give information as to how to continue the further campaign against tuberculosis, especially in young women. If vital statistics are to be of practical value and not merely a list of figures, the biologic significance of the figures must be determined.

American J. Obstetrics and Gynecology, St. Louis

38: 743-926 (Nov.) 1939. Partial Index

- Relationship of Estrogens and Other Placental Hormones to Sodium and Potassium Balance at End of Pregnancy and in Puerperium. H. C. Taylor Jr., R. C. Warner and Catherine A. Welsh, New York.—p. 748.
- Estrogenic and Gonadotropic Hormones in Blood of Climacteric Women and Castrates. C. F. Fluhmann and K. M. Murphy, San Francisco.—p. 778.
- Vascular Lesions in Decidua Basalis. J. L. McKelvey, Minneapolis.—p. 815.
- Chorionepithelioma: Clinical and Pathologic Study. K. M. Wilson, Rochester, N. Y.—p. 824.
- Arterial Phenomena Associated with Uterine Bleeding in Tular Pregnancy. H. O. Jones and J. I. Brewer, Chicago.—p. 839.
- Ovarian Hormones and Experimental Menstruation. G. W. Corrett, Rochester, N. Y.—p. 862.
- Brenner Tumors of Ovary: Report of Fourteen New Cases. E. Nork and H. W. Jones, Baltimore.—p. 872.
- Effect of Carcinoma of Cervix Uteri and Its Treatment on Urinary Tract. H. S. Everett, Baltimore.—p. 889.
- Management of Acute Puerperal Inversion of Uterus. S. A. Cozart, Jersey City, N. J.—p. 912.

American Journal of Ophthalmology, St. Louis

22: 1201-1320 (Nov.) 1939

- Role of Cervical Sympathetic Ganglions and Müller's Orbital Muscle in Experimental Exophthalmos. G. K. Smelser, New York.—p. 1201.
- Role of Brucella in Human and Animal Ocular Disease, with Special Reference to Periodic Ophthalmia in Horses. E. L. Burky, R. R. Thompson and Helen M. Zepp, Baltimore.—p. 1210.
- Experimental Production of Conjunctivitis with Staphylococci. J. H. Allen, Iowa City.—p. 1218.
- Study of Professions Testing Ocular Refraction. E. A. Thacker, New Orleans.—p. 1227.
- Dystrophia Adiposa Corneae. H. C. Knapp, East St. Louis, Ill.—p. 1239.
- *Effect of Sulfanilamide on Course of Trachoma. L. A. Julianelle, St. Louis; J. F. Lane, Albuquerque, N. M., and W. P. Whitted, Gallup, N. M.—p. 1244.
- Larval Conjunctivitis: Report of Case Due to Estrus Ovis. H. R. Sniderman, Cincinnati.—p. 1253.
- Streptococcal Pseudomembranous Conjunctivitis Treated with Sulfanilamide. K. C. Swan and J. H. Allen, Iowa City.—p. 1255.
- Congenital Secondary Glaucoma: Report of Two Cases Syphilitic in Origin. A. V. Hallum, Atlanta, Ga.—p. 1262.
- Retinal Angiospasm: Case Report. Helen Hoft, Chicago.—p. 1266.

Sulfanilamide for Trachoma.—Julianelle and his co-workers used sulfanilamide for the treatment of seventy-seven patients with various stages of trachoma, that is, from minor to predominant involvement of the cornea. The treatment recommended by Loe (reported in THE JOURNAL Oct. 8, 1938, p. 1371) was adopted. This consists of oral administration of sulfanilamide, one-third grain per pound of body weight for the first ten days of treatment, with a reduction to one-fourth grain for the following fourteen days. The daily total was divided into three doses. An equivalent amount of sodium bicarbonate was given in tablet form. In addition, it was found desirable to irrigate the eyes each morning with a saline boric acid solution, and in a few instances atropine was applied locally when indicated to mitigate the pain and discomfort of corneal ulcers. Irrespective of the type of trachoma (uncomplicated, with secondary infection or exacerbative) treated the condition was rendered asymptomatic in roughly 20 per cent of the patients, improved in about 40 per cent and unchanged in about 40 per cent. It seems, therefore, that many of the trachomas are improved; but since the disorder still remains clinically active it appears that supplementary treatment, as suggested by Lian and Dik, is indicated. They say that sulfanilamide therapy becomes an effective agent when supplemented by chemical and mechanical measures.

Archives of Dermatology and Syphilology, Chicago

40: 867-1100 (Dec.) 1939

- Poikilodermatomyositis. W. H. Guy, R. C. Grauer and F. M. Jacob, Pittsburgh.—p. 867.
Influence of Age on Ringworm Infection of Scalp: Experimental Study. L. B. Kingery, Portland, Ore., in collaboration with R. J. Williams and H. A. Kidd, Corvallis, Ore.—p. 879.
Necrobiosis Without Diabetes. G. H. Belote and D. G. Welton, Ann Arbor, Mich.—p. 887.
*Permeability and Absorptivity of Skin. J. J. Eller and S. Wolff, New York.—p. 900.
Pyoderma (Ecthyma) Gangraenosum. D. W. Montgomery, San Francisco.—p. 924.
Cutaneous Manifestations of Periarthritis Nodosa. L. W. Ketron, in collaboration with J. C. Bernstein, Baltimore.—p. 929.
Naevus-Epithelioma Adenoides (Cylindroma) of Scalp. S. J. Zakon, Chicago.—p. 945.
Small Nodular Noncaseating Tuberculoderm: Modes of Infection and Localization: Report of Case. S. Crawford, Pittsburgh.—p. 950.
Treatment of Fungous Infections with Ethyl Iodide Inhalations: Review. J. H. Swartz, Boston.—p. 962.
*Generalized Herpes Zoster: Report of Nine Cases. L. P. Barker, New York.—p. 974.
Familial Pigmentary Anomaly. S. W. Becker, Chicago, and M. J. Reuter, Milwaukee.—p. 987.

Permeability and Absorptivity of the Skin.—Eller and Wolff believe that, because of the systemic and local effects of the cutaneous application of various medicaments, the permeability and absorptivity of the skin are of particular importance to the dermatologist. They review the literature on the problem and show that it has already been established that medicaments applied to the unbroken skin may be absorbed into the blood stream, that the rate of absorption may be influenced by the vehicle as well as by the drug it contains and that volatile substances such as alcohol, ether and benzene are vehicles with a much higher rate of absorption than fats. Since no definite technic has been evolved for the determination of fat penetration, the authors made a preliminary study of several methods in order to determine the best procedure to be adopted for subsequent experiments. Certain factors were uniform in all methods. Mature albino rabbits were used, the hair being removed from both control and treated areas with electric clippers. The materials were applied to the skin by daubing with a pad of saturated cotton, light finger massage or spraying. The more viscous products were applied in their normal state and also after being liquefied by gentle heating. A preliminary series of biopsy specimens were taken one, two, three, four, five, six, seven, eight, sixteen and twenty-four hours after application of the products, and normal specimens were always taken from each animal for comparison. Before the biopsy specimens were taken, the areas were swabbed with 70 per cent alcohol and immediately patted dry with cotton. The procedure eliminated an excess of fat on the surface of the skin, thus permitting a more accurate reading of the slides. Sudan III and IV were used for the staining of the fat tissue. However, after preliminary studies sudan IV was adopted as the more clearly defined stain. The authors describe the various technics used for the determination of fat penetration and discuss and criticize each one. The authors tested the rate and depth of penetration of six different fats. From their experiments it appears that: 1. Fats permeate the skin and do so in a large measure along the hair shafts and into the oil gland ducts. 2. Liquid fats permeate the skin more rapidly than solid fats. 3. Animal fats show the greatest depth of penetration, with vegetable fats next and mineral fats least. 4. Most of the fats show optimal penetration between four and six hours after application. After six hours the quantity of fat in the deeper tissues appears to diminish.

Herpes Zoster.—Barker points out that herpes zoster is occasionally accompanied by a generalized vesicular eruption clinically similar to varicella. Some writers believe that herpes zoster and varicella may be caused by different strains of the same virus and that the generalized eruption indicates an infection by both. Others feel that the syndrome is merely a fortuitous concurrence of the two diseases. A third theory, which is based on clinical and experimental observations and seems more probable, is that the generalized eruption is an extension of the zoster itself. Apart from probable origin in the group of filtrable viruses, herpes zoster and varicella have so many clinical and pathologic differences that a common cause does not appear likely. The author reports nine cases of generalized herpes zoster. All the cases occurred in adults. The zoster

in one case could possibly be traced to medication and in another to trauma, and it occurred in a third along with Hodgkin's disease. The zoster in the rest was idiopathic. In two cases the lesions were of the severe type. The general eruption developed from one to five days after the initial zoster and consisted of pinhead-size to split pea-size vesicles on an erythematous base, distributed over the trunk, arms and legs. Some of the lesions became umbilicated and many contained a turbid fluid. In no case was the general eruption profuse. The vesicles did not appear in crops, although in one case they spread downward along the trunk and thighs. They underwent involution in a week or ten days, without scarring. Two patients gave definite previous histories of chickenpox and there was no report of varicella in a contact. The similarity of the clinical pictures in the nine cases observed and the lack of any evidence of varicella, other than the structure of the cutaneous lesions, affords additional evidence that the syndrome is a definite variant of herpes zoster. The author reaches the conclusion that local herpes zoster may be followed by a general eruption which is due to the same causative agent. The causative agent may belong to the group of filtrable viruses and may be related to the agent of chickenpox, although it is probably a separate entity.

California and Western Medicine, San Francisco

51: 289-354 (Nov.) 1939

- *Use of Vitamins in Treatment of Alcoholic Diseases. J. M. Askey, Los Angeles.—p. 294.
Nucleus Pulposus Rupture and Its Relation to Injury: Neurosurgical Aspect. H. A. Brown, San Francisco.—p. 297.
Uterine Cancer: Roentgen Ray Therapy. D. G. Morton, San Francisco.—p. 298.
Convalescent Serum in Acute Anterior Poliomyelitis: Report of Study of 168 Patients, Sixty-Nine Treated and Ninety-Nine Untreated. J. C. Geiger, R. W. Burlingame and R. C. Miller, San Francisco.—p. 303.
Meningococcal Meningitis: Its Treatment. P. M. Hamilton, Alhambra; W. J. Mitchell, Los Angeles, and A. G. Bower, Hollywood.—p. 304.
Surgical Importance of Papaverine Hydrochloride. D. C. Collins, Los Angeles.—p. 307.
Occupational Dermatoses in Aircraft Industry. C. R. Lounsbury, San Diego.—p. 309.
Sterility: Study of 500 Cases. E. Henriksen, Los Angeles.—p. 313.
Equine Encephalomyelitis: Its Relationship to Man in California. B. Howitt, San Francisco.—p. 317.
Acute Pancreatitis. N. C. Paine, Glendale.—p. 319.
Staphylococcus Aureus Meningitis: Report of Case: Treatment with Sulfanilamide: Recovery. H. V. Findlay and M. Hammel, Santa Barbara.—p. 324.

Vitamins for Alcoholic Diseases.—Vitamin deficiencies in chronic alcoholism may be brought about by an inadequate diet, insufficient vitamins, deranged gastrointestinal function (affecting both digestion and absorption) and a diminution in the volume of gastric secretion (a diminished acidity and an increased incidence of achlorhydria). Askey asserts that it is impossible to predict whether clinical manifestations of pellagra or those of polyneuritis will develop in a patient with chronic alcoholism. Diets deficient in thiamin are usually equally deficient in nicotinic acid and riboflavin. The symptoms of polyneuritis or of pellagra may predominate clinically, but multiple deficiencies are the rule. The variability of the deficiency syndromes produced is difficult to explain. Constitutional resistance of certain individuals is suggested by work on experimental animals. Individuals undoubtedly differ in their capacity to utilize and store a particular vitamin. The necessity of using all of the components of the vitamin B complex in therapy is emphasized. While moderate or even large quantities of the indicated crystalline substances are used, it is best to supplement such therapy with liver, eggs, fresh fruit and vegetables, brewers' yeast or extracts of rice bran.

Connecticut State Medical Society Journal, Hartford

3: 591-646 (Nov.) 1939

- Modes of Transmission in Poliomyelitis. J. D. Trask, New Haven.—p. 595.
Hereditary Chorea: St. Anthony's Dance and Witchcraft in Colonial Connecticut. P. R. Vessie, Greenwich.—p. 596.
Anorectal Tuberculosis. A. W. M. Marino, A. M. Buda and I. Skir, Brooklyn.—p. 601.
Provocative Diathermy in Conjunction with Sedimentation Rate: More Accurate Guide in Determining Best Time to Operate in Elective Pelvic Surgery. M. S. Popkin, Bridgeport.—p. 609.
Diagnosis of Bronchiogenic Carcinoma. G. E. Lindskog, New Haven.—p. 611.
Resection of Colon. T. J. Sullivan, New Haven.—p. 613.
Outbreak of Gastro-Enteritis in Middletown in 1938. L. W. Minor, Middletown.—p. 615.

Georgia Medical Association Journal, Atlanta

28: 429-470 (Nov.) 1939

- Chronic Appendicitis: Difficulties and Mistakes in Diagnosis. A. J. Mooney Sr., Statesboro.—p. 429.
- Carotid-Jugular Arteriovenous Aneurysm. J. K. Quattlebaum, Savannah.—p. 433.
- Allergic Enterocolitis with Rectal Prolapse. M. A. Ehrlich, Bainbridge.—p. 438.
- Trends in the March of Medicine. E. D. Shanks, Atlanta.—p. 441.
- Importance of Differential Diagnosis in Heart Disease: Report of Cases. L. M. Blackford, Atlanta.—p. 444.
- Calculus in Diverticulum of Female Urethra: Report of Case. F. D. Edwards, Columbus, and L. E. Daddens, Atlanta.—p. 449.
- Carcinoma of Thyroid Gland. T. C. Davison and F. F. Rudder, Atlanta.—p. 451.
- Bromide Rash Resembling Syphilis in Patient with Positive Wassermann Reaction. R. Brandt and L. Geeslin, Augusta.—p. 457.

Journal-Lancet, Minneapolis

59: 471-520 (Nov.) 1939

- The Fiftieth Anniversary of the Medical School of the University of Minnesota. M. B. Visscher, Minneapolis.—p. 471.
- Genesis of Appendicitis in Light of Functional Behavior of Vermiform Appendix. O. H. Wangenstein, Minneapolis.—p. 491.
- Report of American Student Health Association Committee on Hygiene of Physical Education Activities. T. A. Storey, Palo Alto, Calif.—p. 507.
- Report of American Student Health Association Committee on Informational Hygiene. T. B. Kirkpatrick, New York.—p. 509.

Journal of Nutrition, Philadelphia

18: 319-434 (Oct.) 1939. Partial Index

- Effect of Several Calcium Salts on Utilization of Lactose. Helen S. Mitchell, Gladys M. Cook and Katherine L. O'Brien, Amherst, Mass.—p. 319.
- Factors Influencing Storage of Protein with Low Calory Diets. M. E. Lovell and I. M. Rabinowitch, Montreal.—p. 339.
- Indian and Eskimo Metabolisms. G. W. Crile and D. P. Quiring, Cleveland.—p. 361.
- Study of Metabolism of Maya Quiché Indian. G. W. Crile and D. P. Quiring, Cleveland.—p. 369.
- Relation of Vitamin C Deficiency to Nutritional Anemia. H. C. S. Aron, Chicago.—p. 375.

18: 435-536 (Nov.) 1939. Partial Index

- Synthesis of Fat from Protein by Albino Rat. R. Hoagland and G. G. Snider, Beltsville, Md.—p. 435.
- Influence of Carcinogenic Compound on Hepatic Storage of Vitamins. A. Goerner and M. Margaret Goerner, Brooklyn.—p. 441.
- *Minimum Vitamin A Requirements of Normal Adults: II. Utilization of Carotene as Affected by Certain Dietary Factors and Variations in Light Exposure. Lela E. Booher and Elizabeth Crofts Callison, Washington, D. C.—p. 459.
- Comparison of Cereal and Non-Cereal Diets in Production of Rickets. J. H. Jones, Philadelphia.—p. 507.
- *Distribution of Riboflavin in Meat and Meat Products. O. Mickelsen, H. A. Waisman and C. A. Elvehjem, Madison, Wis.—p. 517.

Utilization of Carotene by Adults.—According to Booher and Callison the vitamin A assay values of cooked peas and cooked spinach, as determined by the rat growth method using U. S. P. reference cod liver oil as the vitamin A standard, were found to be in excellent agreement with the carotene analysis of spinach as determined by chromatographic analysis. A daily intake of approximately 47 and 57 units of the vitamin respectively per kilogram of body weight was necessary for the maintenance of normal dark adaptation in two normal adults when the vitamin A value of the diet was derived almost entirely from the carotene in cooked green peas. A daily intake of approximately 77, 87 and 101 units of vitamin A respectively per kilogram of body weight was required for the same response in three adults when the vitamin A value of the diet was derived almost entirely from the carotene in cooked spinach. For maintenance of normal dark adaptation in adults the utilization of the vitamin A values in cooked peas and cooked spinach is intermediate between those for cod liver oil and for commercial crystalline carotene dissolved in cottonseed oil. A daily intake of thiamin in excess of 400 to 600 international units does not appear to improve the utilization of carotene by adults or to diminish their minimal physiologic requirement for vitamin A. A daily intake of riboflavin in excess of from 1,800 to 2,400 micrograms was not accompanied by increased utilization of carotene or by diminution of the minimal physiologic requirement for vitamin A in adults. Dietary fat in an ordinary mixed diet in excess of that which provides from 30 to 35 per cent of the total caloric intake showed no beneficial effects on the utilization of carotene by normal adults. A marked increase or a marked decrease in

exposure of the eyes of normal adults to ordinary light sources is probably not accompanied by significantly altered requirements for vitamin A.

Riboflavin in Meat.—By the use of a microbiologic method Mickelsen and his associates estimated the riboflavin content of meats and meat products. Liver and kidney of pork, beef, lamb and veal are uniformly higher in their riboflavin content than other organs of these animals. The muscular tissues show a lower riboflavin content than the glandular tissues. There appeared to be no loss of riboflavin by the ordinary household method of stewing. However, the samples that were roasted or fried showed appreciable losses.

Journal of Urology, Baltimore

42: 651-916 (Nov.) 1939. Partial Index

- Chemical Carcinogenic Agents. G. T. Caldwell, Dallas, Texas.—p. 651.
- Differential Diagnosis of Wilms' Tumor Assisted by Intramuscular Urography. P. S. Adams and H. B. Hunt, Omaha.—p. 689.
- Subcutaneous Administration of Diodrast for Pyelograms in Infants. R. M. Nesbit and D. B. Douglas, Ann Arbor, Mich.—p. 709.
- Hypernephromas That Are Too Early to Diagnose. L. R. Wharton, Baltimore.—p. 713.
- Fallacy of Depending on X-Rays in Diagnosis of Certain Important Urologic Conditions. G. L. Hunner, Baltimore.—p. 720.
- Sudden Death Following Intravenous Administration of Diodrast for Intravenous Urography. J. J. Crane, Los Angeles.—p. 745.
- Tumors of Bladder: Review of 101 Cases. C. H. de T. Shivers and K. P. Henderson, Atlantic City, N. J.—p. 761.
- Statistical Study of Present Day Methods Used in Treatment of Tumors of Bladder. L. M. Orr, R. B. Carson and W. F. Novak, Orlando, Fla.—p. 778.
- Surgical Treatment of Large Vesical Diverticula: Presentation of New Technic. R. W. Barnes, Los Angeles.—p. 794.
- Tuberculous Epididymitis. J. K. Ormond and K. L. Meyers, Detroit.—p. 829.
- *Treatment of Sulfanilamide-Resistant Gonorrhea with Sodium Sulfanilyl Sulfanilamide. E. P. Alyea and W. E. Daniel, Durham, N. C.—p. 864.
- Analysis of Therapy in Male Gonorrhea. R. Deakin, M. Wortman, A. Gronau and W. Melick, St. Louis.—p. 874.
- Hernia and Lower Urologic Tract Infection. J. A. Seaman, Springfield, Mass.—p. 887.
- Treatment of Small Caliber Strictures of Anterior Urethra by Electro-Urethrotomy. L. W. Riba, Chicago.—p. 906.

Sulfanilyl Sulfanilamide for Sulfanilamide Resistant Gonorrhea.—Since 1937 Alyea and Daniel have treated forty cases of sulfanilamide gonorrhea with sulfanilyl sulfanilamide. All the patients had previously received adequate treatment with sulfanilamide either in their clinic or elsewhere. Approximately the first half of their patients were treated with sulfanilyl sulfanilamide and the remainder with its sodium salt. Approximately 3 Gm. of the drug was given daily for a period of from ten to fourteen days. In several of the last cases this method of administration was changed in various ways, as the authors believe this dose is too large. When the dose was decreased to 1.8 Gm. a day for ten days, the results were equally good. In the last few cases 1.5 Gm. was given daily for five days and after a rest period of five days the course was repeated with 2 Gm. daily. It is believed that the rest period allows time for the immune reaction to develop and for the body defenses to mobilize. If no signs of infection are present, further medication is unnecessary. However, if infection is still present after a second rest of five days a third course of 3 Gm. of the drug daily may be administered. If there is no change after a few days, the infection is probably not going to respond to this particular drug and therefore after a rest period a different drug should be used. A patient was considered well only when there were no urethral discharge, no symptoms, no pus or bacteria in the centrifuged urine of the first glass and less than ten leukocytes per high power field in the prostatic secretion. The patients considered improved had no urethral discharge and no gonococci in the urethra or in the first urine. The unimproved group have gonococci either in the urethra, prostatic secretion or the centrifuged urine. As these requirements are rather rigid, some of the improved patients might be considered well. With such criteria twenty-two patients were well, five were improved and thirteen were unimproved. It is stated that any drug that cures 55 per cent of sulfanilamide resistant gonorrhea is an important addition to the present methods of treatment. Complications did not develop in any of the patients while they were being treated with sulfanilyl sulfanilamide.

Medical Annals of District of Columbia, Washington

S: 317-344 (Nov.) 1939

- History of Blood Transfusion. C. S. White and J. J. Weinstein, Washington.—p. 317.
Rocky Mountain Spotted Fever (Tick Fever): Report of Four Cases. W. W. Bennett and V. J. Dardinski, Washington.—p. 321.
Electrocoagulation in Otolaryngology. P. S. Constantinople, Washington.—p. 326.

Military Surgeon, Washington, D. C.

S5: 365-460 (Nov.) 1939. Partial Index

- Syphilitic Survey. D. P. Card.—p. 365.
*Oral Foci of Infection as Related to Diseases of Kidney. C. P. Canby.—p. 374.
Study of Influenza Epidemic at Camp Buchanan, Puerto Rico: Epidemiologic and Clinical Study. R. Rodriguez-Molina, A. T. Cooper and A. G. Oliver.—p. 386.
Peripheral Neuritis in Diabetes Mellitus. L. C. Czosnyka.—p. 393.
Technic of Injecting Varicose Veins. L. C. Culligan.—p. 397.
Oral Manifestations of Tuberculosis. K. P. Fulton.—p. 399.
Frequent Complications of Common Fractures. H. B. Macey.—p. 405.
Notes on Field Training of Medical Department Units of the National Guard. H. P. Carter.—p. 411.
Treatment of Minor Wounds and Infections. F. H. Van Wagoner.—p. 427.

Oral Infections and Renal Diseases.—Canby points out that the exact etiologic importance of chronic dental foci as definitely related to renal lesions or infections is difficult to evaluate. Many times the teeth and their supporting structures are not the only or chief source of focal infection. The organisms of oral sepsis are usually of low virulence, producing such slow insidious systemic effects, either by their long continued bacterial invasion or by toxic products, that pathologic changes may become severe before they are noticed clinically. In such cases the removal of dental infection does not always result in improvement. For this reason oral foci are too frequently not considered or they are relegated to minor importance. When exacting bacteriologic procedures are followed, streptococci and staphylococci are frequently recovered from urinary infections. These organisms are similar in morphologic, cultural and biochemical characteristics to those found in dental infection, indicating that they may be the chief primary invaders of the kidney, the other organisms present, such as the colon bacilli, being secondary to the infectious process. Proof of their pathogenic qualities is the reproduction in animals, by numerous investigators, of kidney lesions similar to those from which the patient is suffering, by the injection of organisms recovered from oral focal areas of infection in these patients. Clinical confirmation is indicated by the marked improvement in many cases that follows the elimination of dental infection. Normally the mucous membrane of the mouth and the teeth are highly protective against the invasion of micro-organisms into the underlying tissues. When this natural barrier to infection is lost owing to chronic areas of infection, their importance as possible focal areas must receive careful consideration.

Nebraska State Medical Journal, Lincoln

24: 401-440 (Nov.) 1939

- Principles of Diagnosis and Treatment of Disease in the Elderly. O. H. P. Pepper, Philadelphia.—p. 401.
The Male Sex Hormone and the Prostate. A. D. Munger, Lincoln.—p. 407.
Deep Abscesses of Head and Neck. M. Grodinsky, Omaha.—p. 410.
What Can We Do About Mental Illness? G. L. Sandritter, Norfolk.—p. 414.
Treatment of Prolapse of Rectum. W. F. Bowers, Omaha.—p. 419.
Treatment of Late Syphilis. O. J. Cameron, Omaha.—p. 424.
Mortality and Morbidity of Breech Presentation. E. M. Hansen, Lincoln.—p. 426.

New England Journal of Medicine, Boston

221: 761-800 (Nov. 16) 1939

- War Against Syphilis. E. L. Oliver, Boston.—p. 761.
Lues Latens. P. A. O'Leary, Rochester, Minn.—p. 764.
Indications and Contraindications of Roentgen Ray Therapy in Dermatology. C. G. Lane, Boston.—p. 769.
*Uterine Prolapse: Principle of Vaginal Approach: Preliminary Report of 465 Interposition Operations. J. Fallon, Worcester, Mass.—p. 773.
Cancer. G. W. Taylor, Boston.—p. 779.

Uterine Prolapse.—According to Fallon, uterine prolapse is often underestimated: its urinary complications make it physiologically the analogue of prostatism. The common operations for prolapse fall into two major groups: the abdominovaginal, which combine vaginal plastic repair with some form

of uterine suspension or fixation, and the all vaginal. The three principal vaginal operations are vaginal hysterectomy, parametrial fixation (Fothergill or Manchester) and interposition. The essential lesion in uterine prolapse is a fault in the upper holding apparatus, which the principal all vaginal operations do, and abdominal suspension does not, attack. Studies on the final results support this and other arguments for vaginal approach. The incidence of unsatisfactory results in the series of abdominovaginal operations which are quoted was 20, 30 and 34 per cent. In several hundred cases of vaginal operation (interposition) the incidence of unsatisfactory results was only 10 per cent. This paper is intended to show that prolapse, or at least postmenopausal prolapse, should be handled by some vaginal operation. The author's father turned to the vaginal approach in 1910 and performed 371 interpositions. The author himself employed interposition in ninety-four cases. These 465 interpositions were done with a mortality rate which was the same as that of 8,000 collected interposition operations: 2.2 per cent, seemingly high for a vaginal operation. An interposing instrument is advocated so as to avoid the trauma of tenacula to the uterine wall. Interposition is dangerous and unsatisfactory when the uterus is large and metritic, but such a uterus can be prepared for interposition by irradiation. Interposition does not satisfactorily support the cervical stump; however, the Manchester operation, combined with interposition, does. Ovarian internal secretion, not merely the possibility of pregnancy, contraindicates interposition. The operation should not be done before the natural, or exceptionally an irradiational, menopause.

Oklahoma State Medical Assn. Journal, McAlester

32: 399-432 (Nov.) 1939

- Toxic States Seen in Urology. B. A. Hayes, Oklahoma City.—p. 399.
Gallbladder Surgery. F. A. Hudson, Enid.—p. 405.
Repeated Convulsions in Children: Relation of Demonstrable Organic Pathology in Twenty-Two Consecutive Cases. J. D. Herrmann, Oklahoma City.—p. 412.
Second Year of Survey of Type Incidence of Pneumococcal Infections in Oklahoma. H. D. Moor and Ida Lucille Brown, Oklahoma City.—p. 414.
Asphyxia of Newborn. W. M. Taylor, Oklahoma City.—p. 417.

Psychoanalytic Quarterly, Albany, N. Y.

S: 409-570 (Oct.) 1939

- Transference Problems in Schizophrenics. Frieda Fromm-Reichmann, Rockville, Md.—p. 412.
Developments in Psychoanalytic Conception and Treatment of Neuroses. S. Rado, New York.—p. 427.
Problems of Psychoanalytic Technic. O. Fenichel, Los Angeles.—p. 438.
Permanent Relief of an Obsessional Phobia by Means of Communications with Unsuspected Dual Personality. M. H. Erickson, Eloise, Mich., and L. S. Kubie, New York.—p. 471.
Social and Cultural Implications of Incest Among Mohave Indians. G. Devereux, Worcester, Mass.—p. 510.

Quarterly Bulletin of Sea View Hospital, New York

5: 1-126 (Oct.) 1939

- *Pleural Effusions in Association with Osseous Tuberculosis. W. Cohen and H. K. Taylor, New York.—p. 3.
Limitations in Use of Preserved Blood for Transfusions: Preliminary Report. G. Schaefer and A. S. Wiener, New York.—p. 17.
Adrenocortical Insufficiency in Amyloid Disease: Preliminary Report. E. A. Ornstein, New York.—p. 21.
Mechanism of Action of Sulfapyridine: Production of Soluble Substance. F. Meyer, I. Rosefield and A. Taran, New York.—p. 27.
Physiologic Studies: II. Effect of Pneumothorax Pleuritis and Effusions on Behavior of Pneumothorax Gases. D. Matsuzawa, New York.—p. 40.

Pleural Effusions and Osseous Tuberculosis.—In a study of 200 cases of osseous tuberculosis, Cohen and Taylor found that pleural effusions developed in twenty-seven. There were pulmonary lesions in seventeen of these; five were caseous pneumonic and twelve were benign, i. e. resolving exudative or productive type lesions. Miliary tuberculosis developed in four cases. Single osseous lesions were present in nineteen instances. The spine was involved in 109 cases. Fifteen of these were associated with pleural effusions. In fourteen cases the pleural effusion antedated the x-ray evidences of an osseous lesion. The interval varied from one month to forty-seven years. In thirteen cases the pleural effusion followed the x-ray evidences of an osseous lesion. The authors state that the following possibilities should be considered in pleural effusions: (1) hematogenous dissemination (in the primary or immediate postprimary phase and secondary to an isolated tuberculosis of an organ), (2) con-

tiguous spread (from the lung, thoracic cage or the mediastinum) and (3) lymphatic spread (from the periphery of the lung or from the thoracic cage or abdomen). It is the authors' impression that a pleural effusion can and does arise as a contiguous infection. The nonvisualization of a tuberculous lesion in the spine does not preclude its presence. The mechanism in the development of a pleural effusion with a remote osseous lesion is highly speculative.

Texas State Journal of Medicine, Fort Worth

35: 451-520 (Nov.) 1939

- Late Nonsuppurative Disorders of Hemolytic Streptococcal Diseases. C. S. Keefer, Boston.—p. 457.
Pheochromocytoma: Case Report with Autopsy Findings. B. F. Stevens and W. W. Waite, El Paso.—p. 469.
Importance of Abdominal Pain in Association with Throat Infections in Children. F. A. Garbade, Galveston.—p. 471.
Diagnosis and Treatment of Medulloblastomas of the Brain. A. D'Errico, Dallas.—p. 475.
Traumatic Rupture of Spleen: Report of Nine Cases with Special Reference to Complete Detachment of Spleen from Its Pedicle and to Delayed Splenic Rupture. T. G. Blocker Jr., Galveston.—p. 478.
Intracerebral Aneurysms. P. M. Levin, Dallas.—p. 483.
Pulsating Exophthalmos. Norma B. Elles, Houston.—p. 487.
Tuberculosis in Pregnancy. C. T. Collins, Waco.—p. 491.
Health Maintenance in Industry. C. M. Aves, Houston.—p. 494.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

47: 611-660 (Nov.) 1939

- Aseptic End to End Intestinal Anastomosis: Report of 197 Experimental Anastomoses on Dogs. K. H. Martzloff, P. H. Moore and J. Gardner, Portland, Ore.—p. 611.
Hemorrhage from Subserous Varix of Uterus During First Stage of Labor. E. Löhnberg, San Francisco.—p. 626.
De Quervain's Disease: Frequently Missed Diagnosis. A. W. Diack and J. P. Trommald, Portland, Ore.—p. 629.
Foreign Body in Thyroid Gland. G. F. Norman, San Francisco.—p. 634.
*Painful Heels. L. Cozen, Los Angeles.—p. 636.
Effects of Extracts of Normal and Abnormal Thyroids on Rabbit Heart and Liver. J. B. Wolfe, Philadelphia.—p. 638.

Painful Heels.—Cozen has employed a method of treating painful heels based on the assumption that the pain is a result of either a bursitis or a localized collection of painful fat irrespective of the presence of exostoses: The heel is infiltrated with 5 or 10 cc. of a 0.5 or 1 per cent solution of procaine hydrochloride. The distention of the plantar fat with the fluid may in itself give some relief. A large, long transfusion needle is now inserted from the mesial or lateral aspect of the os calcis. An attempt is made to obliterate any painful bursae or painful fatty nodules that may be present by repeatedly cutting through these areas with the point of the large needle. This needling procedure should be performed on all areas of the heel that previously have been determined to be painful. A simple colloid dressing is applied and the patient is allowed to walk immediately. The author used this method in six cases. In three, relief was present for a period of at least two months. In one bilateral case no relief was experienced. Two patients obtained relief for a period of only two weeks.

Wisconsin Medical Journal, Madison

38: 933-1020 (Nov.) 1939

- "What Is Needed Now . . .?" A. T. Vanderbilt, Newark, N. J.—p. 949.
What Price Depression? R. Sleyster, Wauwatosa.—p. 955.
Management of Gallbladder Disease. H. E. Mock, Chicago.—p. 961.
*Clinical Experiences with Dilantin in Epilepsies. E. R. Hodgson and H. H. Reese, Madison.—p. 968.
Management of Progressive Myopia, Keratoconus and Keratoglobus. J. Y. Malone, Milwaukee.—p. 972.

Dilantin for Epilepsies.—Hodgson and Reese used dilantin for the treatment of eighty-eight patients with epileptic seizures. After from two to ten months of treatment twenty-three patients had none or very few seizures, thirty-five had a definite decrease in the frequency of their seizures and thirty experienced slight or no improvement. Most of the patients suffered grand mal attacks, some from both petit and grand mal attacks. There seems to be no correlation between the previous medication and the improvement resulting from dilantin. The absence of a sedative effect from this drug makes its use desirable for persons of normal intelligence who are made somnolent by other drugs. Toxic reactions may accompany its use and therefore it should be given only to individuals who can be under some medical supervision, at least at the start of the treatment.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

27: 209-432 (Oct.) 1939

- Investigation into Effects of Radium on Carcinoma of Breast. J. P. Ross.—p. 211.
Distribution and Treatment of Extra-Articular Foci in Tuberculous Arthritis of Hip Joint. J. A. Cholmeley.—p. 224.
*Causes of Relapse Following Sympathectomy of Arm. H. T. Simmons and D. Sheehan.—p. 234.
Actinomycotic and Mycotic Lesions, with Special Reference to "Madara Foot." B. P. Tribedi and B. N. Mukherjee.—p. 256.
Silent Hypernephromas. M. J. Smyth.—p. 266.
Raised Intracranial Pressure: Hydrocephalic and Vascular Factors. H. Cairns.—p. 275.
Congenital Diverticulum of Common Bile Duct. J. Walton.—p. 295.
Chronic Ulceration of Greater Curvature of Stomach: Case Report. R. Shackman and F. H. Kemp.—p. 316.
Benign Fibro-Osseous Tumors of Skull and Facial Bones. K. C. Eden.—p. 323.
*Pathology, Diagnosis and Treatment of Hashimoto's Disease (Struma Lymphomatosa). C. A. Joll.—p. 351.
Fractures of Lower Leg: Method of Reduction and Immobilization. D. L. Stevenson.—p. 390.
Studies in Pneumonectomy and Development of Two-Stage Operation for Removal of Whole Lung. F. R. Edwards.—p. 392.

Causes of Relapse After Sympathectomy.—In reviewing the results of thirty-eight ganglionectomies and of twenty-nine preganglionic sections of the thoracic cord performed since 1931, Simmons and Sheehan find that both types of operation are liable to be followed by relapse and that when it occurs it appears at an earlier date after preganglionic section than after ganglionectomy. When cases of incomplete denervation are excluded, the relapses fall into two groups: those in which symptoms recur within a few days of operation (or would be evident at this time if tested objectively by immersion in water at 59 to 64.4 F.) and those in which relapse does not appear for several months and which the authors designate late relapse. The first group of early relapses are due to a local fault in the digital vessels which is sufficiently severe to nullify the effectiveness of the vasodilatation obtained by the sympathetic denervation. The second group of late relapses cannot be accounted for by the hypersensitivity of the denervated blood vessels to circulating epinephrine. This hypersensitivity diminishes with time and is less evident or may be completely absent when clinical relapse becomes apparent. In all of the authors' arm cases relapse has been accompanied by a regeneration of vasoconstrictor fibers. The reappearance of these nerves has been first observed when, or shortly before, clinical relapse has become apparent. In certain cases it has been possible to predict with success a clinical relapse by the discovery of regenerating vasoconstrictor fibers in the ulnar nerve. The symptoms of relapse when manifest become steadily worse and at the same time there is a gradual increase in the degree of vasodilatation obtained by anesthetization of the ulnar nerve. It seems highly probable, therefore, that regeneration of vasoconstrictor nerve fibers is the cause of late relapse after sympathectomy. A progressive local fault in the digital vessel may produce a late type of relapse.

Hashimoto's Disease.—Joll analyzes eighty-one unreported cases of Hashimoto's disease in order to establish its specific features as compared with Riedel's disease and with certain other nonsuppurative lesions of the thyroid. The pathologic features which characterize the disease are a diffuse lymphocytic infiltration associated with germinal lymph follicles, a widespread though peculiar destruction of the thyroid parenchyma followed by fibrosis of a particular distribution. Somewhat similar changes of a focal type in thyrotoxic and other goiters are not accompanied by the clinical features of lymphomatous struma. Clinically lymphomatous struma is associated with a tendency to progressive destruction of the function of the thyroid leading to myxedema. The goiter itself affects all parts of the gland proportionally, and while it is firm and resilient it never becomes iron hard or woody in consistency. There is never any diffuse extrathyroid involvement of the cervical tissues. Pressure effects tend to be slight or moderate in degree, in contrast to the grave pressure effects of Riedel's disease. Differentiation from malignant disease, Riedel's struma and other forms of thyroiditis is frequently possible. Surgical treatment is seldom imperative and should be avoided until the effects of roentgen therapy have

been determined. If operation is required, bilateral partial resection of the gland without ligation of the main arterial trunks is probably best. The operative risks are extremely small, the technical difficulties are trivial and postoperative complications are rare, in contrast to the high mortality and morbidity associated with operations for Riedel's disease. Recurrences are rare in lymphomatous struma, though postoperative myxedema must be anticipated and prevented by appropriate thyroid medication. Recurrences after operations for Riedel's disease are comparatively common, though postoperative myxedema is exceptional.

British Medical Journal, London

2: 983-1028 (Nov. 18) 1939

- Treatment of Open Fractures. W. Gissane.—p. 983.
Intra-Uterine Development of Respiratory Effect. J. Barcroft.—p. 986.
Treatment of Angina of Effort. G. Bourne.—p. 988.
Inguinal Hernia: New Operative Reinforcement. A. Simpson-Smith.—p. 990.
Conservation of Cervix Uteri in Operations for Prolapse: New Operative Procedure. J. W. A. Hunter.—p. 991.

Lancet, London

2: 1013-1058 (Nov. 11) 1939

- *Tonsillectomy and Nephritis of Childhood. R. S. Illingworth.—p. 1013.
Dissecting Aneurysm of Aorta. T. East.—p. 1017.
Huge Dissecting Aneurysm. E. Gardner, A. J. Galbraith and S. W. Hardwick.—p. 1019.
*Cod Liver Oil Dressings: Their Mode of Action. M. Lichtenstein.—p. 1023.
Miniature Radiography, with Two Tubes, Two Cameras and Only One Generator. B. A. Dormer and M. Gibson.—p. 1026.

Tonsillectomy and Nephritis of Childhood.—Illingworth reports a study of 365 cases of nephritis, 301 of which were in the acute stage of the disease. Summarizing his observations the author says that of 301 patients admitted to the Hospital for Sick Children in the last eleven years for acute nephritis 20.2 per cent had had tonsillectomy some months or years previously. This figure does not include patients found on admission to have tonsil remnants. It is calculated from the figures showing the incidence of tonsillectomy among London children that only 9 per cent of the children admitted for the disease might be expected to have had the operation. It is reasonable to suggest, therefore, that tonsillectomy, so far from preventing nephritis, has more than doubled the chances of the development of the disease. It is a suggestion which requires confirmation from other sources. In fifteen (5 per cent) of the cases admitted for acute nephritis in the last eleven years, tonsillectomy is considered to have been the probable cause of the disease. The nephritis was not mild. All of the four cases seen later still showed evidence of active disease from four to eleven years after the onset. Tonsillectomy was performed in 119 cases in the acute phase of the disease. No beneficial effect on the urinary condition was noted. Of these patients 84 per cent were discharged with abnormal urine after an average stay in the hospital of thirty-six days between the operation and discharge; and 86 per cent of the patients not operated on were discharged with abnormal urine. Tonsillectomy did not prevent exacerbations some months later or check the activity of the nephritis. Of fourteen patients seen in the hospital in the subacute stage some years after the onset of nephritis, eight had had their tonsils removed during the acute stage. Reexamination of children from one to twelve years after the onset suggested that those children who had had their tonsils removed had fared no better than those whose tonsils were still intact: twenty-three of thirty-four of those in whom the operation was performed in the acute stage, fifteen of twenty-one of those in whom the operation was performed before the onset of nephritis, twenty of twenty-seven of those with tonsils intact on reexamination and the four cases with nephritis caused by the operation still showed evidence of activity. The final conclusion is reached that (1) tonsillectomy does not prevent nephritis but may predispose to it, (2) tonsillectomy does not cure nephritis or prevent it from progressing to the chronic stage and (3) tonsillectomy may cause nephritis.

Cod Liver Oil Dressings.—In work undertaken to investigate the bactericidal power of cod liver oil, some new facts were discovered. Lichtenstein found that cod liver oil has a definite bactericidal power, but the question arises as to why the use of cod liver oil in dressings should possess advantages

over other bactericidal preparations. An important factor in this connection is the fact that the cod liver oil dressing is nonirritant to the tissues. Indeed, so far from damaging these, it supplies them with vitamins and possibly other forms of nourishment and it mechanically protects the young granulation tissue and epithelium from damage by the dressing. The stimulation of leukocytes by cod liver oil, observed by Traxl, may also contribute to its beneficial effect. Perhaps these various factors, together with its bactericidal action, may explain the clinical efficiency of cod liver oil in dressings. In the course of this work it has been found that the bactericidal power of cod liver oil is substantially enhanced by irradiation with ultra-violet rays from a mercury vapor lamp. Parallel with this, the peroxide content is increased. The bactericidal action of an oil is closely related to its content of peroxides. It is to be expected that irradiated oil may prove even more efficient than the non-irradiated product. The irradiated oil should therefore be given a clinical trial.

2: 1059-1106 (Nov. 18) 1939

- Medical Literature. R. Hutchison.—p. 1059.
*Conservative Treatment of Liver Abscesses. A. C. Alport and P. Ghaliougui.—p. 1062.
Staphylococic Septicemia Complicating Carbuncle of the Face: Recovery After Treatment with Sulfapyridine. A. W. Abramson and B. Flacks.—p. 1065.
Septicemia Due to Staphylococcus Albus Treated with Sulfapyridine. S. Galewski and H. S. Stannus.—p. 1067.
Hemoglobin Solution as Blood Substitute. L. O'Shaughnessy, H. E. Mansell and D. Slome.—p. 1068.
Storage of Transfusion Plasma. F. A. Knott and E. H. Koerner.—p. 1069.
Prevention of Fear in Cardiazol Therapy by Preliminary Anesthesia with Cyclopropane or with Nitrous Oxide. W. L. Neustatter and H. Freeman.—p. 1071.
Automatic Tidal Drainage of Bladder. R. S. Lawrie and P. W. Nathan.—p. 1072.

Conservative Treatment of Liver Abscess.—According to Alport and Ghaliougui, the recognized treatment of liver abscesses is aspiration and emetine; operation is resorted to only if the abscesses are secondarily infected. Amebic abscesses, once the amebas are destroyed by emetine injections, may be looked on as sterile. Surgical treatment, apart from the inherent risk attached to any operation especially on a severely debilitated person, adds the risk of secondary infection. In many tropical hospitals the routine procedure is to explore the abscess, stain a smear of pus, and examine it microscopically. If polymorphonuclear cells or bacteria are found, the patient is sent at once to the surgeon. The authors think that if operation had been performed on one of their patients the debilitated toxic and dehydrated state would probably have caused his death on the operating table. Having successfully treated a case of pyelocystitis due to *Bacillus pyocyaneus* with a sulfonamide derivative after all other treatment had failed, the authors decided to try the drug here. The patient recovered. Since then Stewart and Bates have reported cases of *Bacillus pyocyaneus* infection successfully treated with sulfanilamide. The authors do not suggest that all infected or pyogenic liver abscesses should, as a routine, be treated by aspiration and with sulfonamide derivatives; but in selected cases conservative treatment seems to be indicated. The authors report five cases of amebic liver abscess treated with emetine and by aspiration. In one case 3,500 cc. of pus was removed in one sitting. One patient was secondarily infected with *Bacillus pyocyaneus* and recovered on a sulfonamide derivative given by mouth and into the abscess cavity, besides the treatment described. All the patients but one recovered. Postmortem observations show that this patient could not have been saved by open operation. One other patient, however, had another attack of amebic dysentery, accompanied by further liver abscess formation, five months after discharge from the hospital. In all these cases the extremely toxic conditions of the patients rendered operation dangerous.

Medical Journal of Australia, Sydney

2: 633-670 (Oct. 28) 1939

- Effect of Estrogenic Hormone on Prostate of Marsupial *Trichosurus vulpecula*. A. Carroddus and A. Bolliger.—p. 633.
Infant Welfare Movement in Australia. W. G. Armstrong.—p. 641.
Sigmund Freud (1856-1939). W. S. Dawson.—p. 648.

2: 671-704 (Nov. 4) 1939

- Steatorrhea. L. Hughes.—p. 671.
Id. F. S. Hansman.—p. 677.
Blindness in Private Practice. J. R. Anderson.—p. 680.

Journal de Chirurgie, Paris

54: 433-592 (Oct.-Nov.) 1939

Synovial Biopsy in Diagnosis of Bacillary Arthropathy with Insidious Onset and of Traumatic Arthritis Immobilized for a Long Time. Paitre, R. Dubau and R. Solier.—p. 433.

Thyroidostrumitis or Microsporadic Pseudo-Exophthalmic Goiters or Microsporadic Lipidic Goiters with Hyperthyroid Symptomatology.. A. Jentzer.—p. 448.

*Operation of Semb in Operative Cure of Pulmonary Tuberculosis. G. Lardennois and O. Monod.—p. 458.

Treatment of High Vesicovaginal Fistulas by Vaginoperineal Route. G. Picot.—p. 474.

Semb's Operation in Pulmonary Tuberculosis.—Lardennois and Monod direct attention to the surgical method which Semb developed in order to obtain an effective and selective pulmonary collapse. Semb designates his method as thoracoplasty with extrafascial apicolysis. He described it in detail in supplement 37 to volume 76 of *Acta chirurgica Scandinavica* (1935). Semb's intervention is characterized by depression of the apex, which is accomplished by (1) extensive subperiosteal resection of the four upper ribs, (2) depression of the pleuropulmonary dome and (3) the maintenance of this "pneumocathesis" (pulmonary depression) by a technical artifice. Lardennois and Monod describe the technic as recommended by Semb; they report the results they obtained with the method and compare these with the results obtained by simple thoracoplasty in comparable cases. A number of detailed illustrations clarify the description of the technic. The authors have employed Semb's operation thus far in forty cases. They had no post-operative fatalities. However, in one case a secondary hemorrhage developed and in another one a complex suppuration. They stress that the operative sequels are unusually mild, that the cavities become rapidly effaced and that expectoration containing bacilli soon disappears. The late results appear more secure than those which are observed following the use of extra-pleural pneumothorax and as reliable as and more rapid than those of thoracoplasty. To be sure, it is necessary to exercise care in the selection of the patients as well as in the execution of the operation. Nine times in forty-nine cases the authors abandoned apicolysis, retreating before undue difficulties and putting the patients back into the group of candidates for thoracoplasty. After comparing the results of thoracoplasty and of Semb's operation, they reach the conclusion that Semb has devised a useful surgical method for unilateral tuberculous lesions of the apex and that the procedure is to be recommended for carefully selected cases.

Confinia Neurologica, Basel

2: 257-320 (No. 5) 1939

Vestibular Nystagmus. A. de Kleyn.—p. 257.

*Spinal Cord Tumor at Foramen Magnum: Two Cases. M. H. Weinberg.—p. 292.

Frontal Decompression Suggested as Treatment of Visual Disturbances in Oxycephaly. A. Schüller.—p. 303.

Investigations on Trophic Influence of Sympathetic on Tissues, Especially Bone. L. Asher and C. T. Dirr.—p. 306.

Angioblastic Meningioma with Symptoms of Parkinsonism. K. H. Krabbe and C. J. Munch-Petersen.—p. 312.

Spinal Cord Tumor at the Foramen Magnum.—Weinberg reports two cases of spinal cord tumor. Two years before hospitalization, the first patient, a woman aged 31, injured her back in a serious fall and developed complete paralysis eight months afterward together with a nerve lesion that prevented her from speaking except when on her side. Neurologic examinations disclosed complete tetraplegia with bilateral wrist drop and the absence of sensation below the trigeminal innervation area. A gibbus was likewise observed in the second cervical vertebra. The patient died of medullary compression before she could be operated on. Necropsy disclosed a 2 by from 4 to 5 cm. ovoid spongy mass, of which 0.5 cm. protruded into the posterior fossa and was attached to the meninges of the medulla oblongata. The left vertical artery was firmly embedded in the center of this tumor. The second patient, a man aged 47, had felt pain in the cervical area seven months before clinical examination, the pains radiating down both arms to the elbows on sneezing, laughing or exertion. Persistent dizziness and nausea, regularly disappearing when lying down, caused him to

seek hospital aid. Neurologic examinations revealed, among other things, a mild papilledema on the right, a weakness of the right facial and sundry irregularities in the reflexes. The Romberg sign was positive. Laboratory tests of the spinal fluid indicated a high total protein content (100 mg. per hundred cubic centimeters). The Queckenstedt test proved negative; roentgenograms likewise. On operation, a tumor 3 cm. in length was exposed, lying about half above and half below the foramen magnum. Diagnosis of a frozen section indicated a spongioblastoma. The patient died six hours after operation from medullary compression. In spite of the divergent pathognomonic features of the syndrome reflected in medical writings, a significant characteristic that, according to the author, should provoke diagnostic suspicion, is the presence of pain in the cervical region (at times in the occipital region) tending to extend down both arms to the elbows and aggravated by muscular efforts involved in coughing, sneezing and other exertions. The evolution of other symptoms seems to depend on the extent of the tumor and the direction of its growth. When tumors project into the posterior fossa, symptoms of intracranial pressure occur, such as nystagmus, papilledemas (more frequently present, in the author's opinion, than generally assumed), vertigo, ataxia, past pointing and astereognosis. Cerebellar symptoms are mentioned by most authors. Among the signs not specifically characteristic of spinal cord tumors are high or moderately high protein levels discovered in the spinal fluid, partial or complete spinal block, paresis of infrabuccal facial nerves, atrophy of the muscles of the upper extremities and speech difficulties. The author regards clarification of the symptomatology of the spinal cord tumor syndrome as important for the early diagnosis of the disease and the possible preservation of the life of the patient.

Schweizerische medizinische Wochenschrift, Basel

69: 1073-1152 (Nov. 4) 1939. Partial Index

Sepsis and Metastatic Ophthalmia. V. Haemmerli.—p. 1078.

Three Cases of Cataract Caused by Electricity. O. Knäsel.—p. 1084.

Conscious Visual Hallucination in Senility (Charles Bonnet Type). A. Patry.—p. 1090.

*Significance of Ophthalmoscopic Aspects in Renal Diseases During Pregnancy. T. Koller and G. Meyer.—p. 1117.

Observations on Stereoscopic-Binocular Single Vision in Unilateral Aphakia (After Operation for Cataract). A. Gloor.—p. 1120.

Strabismus in Twins. O. Heinonen.—p. 1131.

Prognosis of Detachment of Retina Without Tear. P. Avienis.—p. 1140.

*One-Eyed Persons As Drivers of Motor Vehicles. F. Schwarz.—p. 1142.

Ophthalmoscopic Aspects of Renal Disorders During Pregnancy.—Koller and Meyer, at the university clinics in Zurich, report ophthalmologic examinations of 110 pregnant women with renal disorders. Of the thirty-seven who had pregnancy nephropathy 35 per cent, of the eighteen with preeclampsia 61 per cent, of the forty-nine with eclampsia 24 per cent and of the six with chronic nephritis five had positive ophthalmoscopic aspects. The authors investigated by means of questionnaires the present status of the health, the working capacity and the subsequent number of births in women in whom from one to fourteen years had elapsed since the previous examination. In thirty-three cases a urinalysis was made, the blood pressure was controlled and an ophthalmoscopic examination was made. The authors found that in the patients with a positive ophthalmoscopic aspect (except in those with preeclampsia and chronic nephritis) the puerperal maternal mortality was from two to three times greater and the fetal mortality in cases of preeclampsia and chronic nephritis was from three to five times greater than in the absence of ophthalmic changes. The state of health and the working capacity of the women in whom nephropathy and eclampsia were combined with positive ophthalmoscopic aspects were less favorable than in those with ophthalmic symptoms. The ophthalmoscopic control examinations revealed normal conditions in all cases, with the exception of one case of preeclampsia and two cases of eclampsia. In nearly all cases of nephropathy, in half of the cases of preeclampsia and in one third of the cases of eclampsia the blood pressure was permanently increased. A connection between former ophthalmologic changes and a later increase in blood pressure could not be demonstrated. The authors reach the conclusion that ophthalmoscopic changes during the renal dis-

orders of pregnancy represent serious complications and impair the prognosis with regard to maternal mortality as well as with regard to the later health of the mother.

One-Eyed Persons as Drivers of Motor Vehicles.—Schwarz says that since 1927 the institute for legal medicine of the university of Zurich has made examinations to determine the suitability of drivers of motor vehicles, particularly of those with some defect. During the first two years the institute generally rejected one-eyed persons as incompetent for driving motor vehicles. The rejection was made because of the deficient binocular stereoscopic vision and even more on account of the limitation of the visual field. Since 1929, however, the requirements for the visual acuity of drivers of motor vehicles have become somewhat more lax. For one-eyed persons (this term includes persons in whom the eye with the poor vision has an acuity of less than 0.1) the minimal demand was that the better eye should have a minimal visual acuity of 0.8 (corrected or natural). Moreover, a waiting period of one year must have elapsed after the patient has become monophthalmic before a driver's license can be granted and the holder of a license must refrain from driving for six months after he has lost the vision of one eye. Ten years has now elapsed since one-eyed persons were permitted to drive motor cars and so the author decided to investigate the accidents caused by one-eyed drivers. He gained the impression that one-eyed persons have a disproportionately high accident figure. Analysis of the cases in which one-eyed drivers were implicated revealed an extraordinarily high incidence of collisions on crossings. The author was surprised to learn that the side from which the danger approached did not always correspond with the side of the visual defect. However, he thinks that this becomes understandable when it is considered that the one-eyed person has difficulties to orient himself about what transpires on the sides. In order to compensate for the defect in the visual field, the right-eyed person will turn to the left and the left-eyed to the right. This moving of the head causes lateral objects to be seen too late or not at all. Other accidents that are frequent with one-eyed persons are due to the fact that, in the act of passing, the one-eyed person wrongly estimates the distance between two vehicles and turns too early back into his lane. This type of accident is again a result of the limitation of the visual field. Other accidents are due to the fact that the one-eyed person overlooks signals or estimates distances erroneously. At night and in weather with low visibility, the deficiency in the estimation of distances becomes especially dangerous. The author concludes that in certain situations the one-eyed driver doubtless endangers the safety of motor traffic. In granting a driver's license to such a person, attention must be called to the increased danger involved in his defect. Moreover, he should be obliged to avoid everything that might further impair his qualifications as a driver.

Anales de la Clinica Quirurgica, Lima

1: 1-64 (May) 1939. Partial Index

*Inflammatory Neoformations of Female Urethra. E. Navarrete and D. G. Kaelin.—p. 10.

Congenital Hypoplastic Kidneys: Cases. E. Blondet.—p. 32.

Inflammatory Neoformations of Female Urethra.—In the course of the last two years, Navarrete and Kaelin, of the clinic for diseases of the urinary tract of women of Lima, observed sixty-five cases of inflammatory polypoid formations at the female urethra. The majority of the patients were between the ages of 30 and 50. There was only one patient under the age of 30, and two patients were beyond the age of 50. According to the authors the condition is due to chronic infection. The symptoms vary with the predominant location of the formation at either the meatus or the neck of the bladder. In either case pain, more or less acute disorders of urination, disturbances of the sexual functions and neuroses are frequent. The neoformations at the meatus show as tumors, the benign nature of which is ascertained by a biopsy. The diagnosis of polypoid neoformations of the neck of the bladder is done by endoscopy. Either form may be complicated by hemorrhages and, in rare cases, by gangrene and septic conditions from disturbances of the local lymphatic circulation. Polypoid neoformations of the meatus follow, as a rule, a benign evolution, but they may develop into cancer. The treatment consists in destruction of the neoforma-

tions by means of electrocoagulation and high frequency currents. At completion of the treatment the patients report disappearance of the symptoms and normal functions in urination. An examination of the meatus and the neck of the bladder shows that the structures regain a normal morphologic appearance.

Deutsches Archiv für klinische Medizin, Berlin

185: 1-144 (Sept. 13) 1939

*Pancreatic Function in Diseases of Biliary Passages. W. Berger and H. Schnetz.—p. 1.

Azurophile Rod-Shaped Inclusions in Cells of Multiple Myeloma. B. Steinmann.—p. 49.

Lymphosarcomatosis and Eosinophilia. H. W. Gerstenberg.—p. 62.

Investigations on Increase of Primary Pulmonary Cancer with Consideration of Its Pathogenesis. von Glinzki.—p. 73.

Investigations on Iron Metabolism: Investigations on Resorption of Iron Under Normal and Pathologic Conditions. L. Heilmeyer and H. Koch.—p. 89.

Hematologic Observations. F. P. Weber and H. Huber.—p. 102.

Physical Foundations of Normal Pulmonary Percussion. G. Landes.—p. 116.

Pancreatic Function in Biliary Tract Diseases.—Berger and Schnetz made functional examinations on patients with biliary disorders. The improved functional examinations of the external and internal secretion, which were used at their clinic, made it possible to determine even slight deficiencies in function, among them the compensated latent disturbances. In 115 cases of disorder of the biliary passages the secretion of amylase and of trypsin was determined with the method of Berger and Hartmann and fifty-one of these patients were, in addition to this, subjected to Schnetz's examination, in which the sugar regulation serves as the indicator of the secretion of the insular hormone. These functional tests revealed disturbances in the external and internal secretions in a large number of patients with biliary disorders (among them some who continued to have symptoms in spite of surgical treatment). Thus the tests proved the high incidence of pancreatic involvement in biliary disorders. Of 115 patients examined for the external secretion, 103 had disturbances in the secretion of amylase and seventy-one in the secretion of amylase and of trypsin. Among the fifty-one patients in whom the internal secretion was tested, fifty were found to have disturbances. The cholangiogenic pancreatopathies occur in various types and combinations and frequently both types of secretions are involved. In the external secretions, inhibitions were more frequent than irritations, whereas, in the internal secretions, the irritations predominated over the inhibitions. The amylase production was irritated in seventeen cases and inhibited in eighty-six cases; among the simultaneous deviations in amylase and trypsin there were eight double irritations and sixty-three double inhibitions. Among the cases of disturbance in the internal secretion there were twenty-six cases of hyperinsulinism and twenty-four cases of diabetic inhibitions. The majority of the functional disturbances were manifest, that is, clinically recognizable symptoms of pancreatic disturbance could be observed; only a few were latent. Some of the disturbances, particularly the irritations, yielded to the administration of pancreatic preparations, but others, especially the double inhibitions, were permanent. The inhibitions involve chiefly, but not exclusively, the secretion of amylase; this seems to be the most sensitive ferment secretion. The authors stress the diagnostic and prognostic value of the improved functional tests of the pancreas, particularly in connection with the pancreatic involvement in biliary disorders.

Fortschritte a. d. Gebiete der Röntgenstrahlen, Leipzig

60: 199-252 (Sept.) 1939

Roentgenograms and Their Anatomopathologic Bases in Healing of Vertebral Lesions. A. Lob.—p. 199.

Roentgenologic Examination of Cardiac Function. W. Teschendorf.—p. 214.

*Effects of Roentgen Rays on Bones: Experiments on Dogs. H. Bade and G. Künscher.—p. 235.

Technic of Indirect Roentgen Microfilmkinematography of Heart and Vascular Band Shadow During Hydrostatic and Balneotherapeutic Treatment. O. Willbold.—p. 243.

Effects of Roentgen Rays on Bones of Dogs.—Bade and Künscher review the effects of roentgen rays on the bones and bone regeneration of animals and man and report their experiments on dogs. They found that neither a dose of 12 times 400 roentgens per field nor a daily penetration dose of 560, accumulating to 8,000 roentgens, induced a clinical bone frac-

ture, though observations were continued in some cases for half a year. In overdosage, however, the severity of the lesions induced in the skin and musculature necessitated the killing of the animal after three months. Doses of two series of 12 times 300 roentgens administered two months apart were unproductive of severe cutaneous lesions but destroyed the red and white corpuscles, converted normal red marrow into yellow and severely injured the nuclei of the cells. In order to test the effect of smaller doses on the bone, the authors subjected the radius of the front left leg of five dogs to an irradiation of 6 times 400 roentgens and resected a piece of the radius 2 cm. in length from both the five dogs and the untreated controls, carefully avoiding injury to the ulna. The experimental wounds healed equally in all without infection, but, while periosteal stratification could be distinctly observed in the controls after two or three weeks, no bone structure changes were determinable in the specimens treated. From four to eight weeks subsequently, however, a typical fatigue fracture was noted in the ulna, unaccompanied by signs of periosteal reactions or modifications in the bone structure of the ulna. Microscopic examinations as late as six months later of the connective tissues in the vicinity of the clinical fracture disclosed no changes that could be attributed to roentgen ray lesions nor did the fatigue fracture of the ulna indicate progressive callus activity. The authors interpret their experiments as corroborative of the view that femur fractures attributed to the destructive actions of the roentgen rays are really fractures due to bone weakness. The fact that doses productive of epilation have no other effects on the skin and connective tissues but can completely suppress functional bone regeneration indicates to them that the bones, especially the normal osteogenic tissues, are far more sensitive to irradiation than the skin and the connective tissues. Bones subjected to a more intense roentgen ray action lose their regenerative power. The authors concede that roentgen ray lesions may undergo a prolonged latency, only to be activated by an infection or a trauma.

Kinderärztliche Praxis, Leipzig

10: 393-448 (Sept.) 1939. Partial Index

- Treatment of Severe Intoxications. E. A. Voss.—p. 393.
Treatment of Pneumonia with Sulfapyridine in Children. A. Gnosspelein.—p. 397.
*Transitory Appearance of Diabetes Mellitus During Childhood. A. Fykw.—p. 402.
Care of Skin in Healthy and Diseased Nurslings. R. Winkler.—p. 410.
Significance of Vitamin B₁ (Aneurin, Thiamin) for Children. E. Glanzmann.—p. 412.
Colds During Childhood. A. Peiper.—p. 418.

Transitory Diabetes Mellitus During Childhood.—

Fykw says that the question has been raised whether children who have diabetes mellitus can recover completely. After citing one report of the concurrence of transitory diabetes mellitus with catarrhal jaundice the author reviews the clinical history of a boy in whom diabetes mellitus became manifest in the course of pneumonia. The diabetic symptoms could be counteracted by insulin and later the diabetes disappeared entirely. That this was a case of diabetes mellitus and not the result of a temporary impairment of the pancreas was proved by the fact that sugar tolerance tests produced abnormal curves not only in the boy but also in the father and one of his sisters. This indicates a familial predisposition for diabetes mellitus. A similar case of transitory diabetes was reported by Söderling. The author thinks that such children have a deficient pancreas and that later they will probably develop a permanent diabetes mellitus. Nevertheless, early recognition of a predisposition to diabetes mellitus might make possible an effective prophylaxis. Since the insular cells of an impaired pancreas are readily damaged and since the metabolic status of diabetic patients can be greatly impaired by the consumption of a large quantity of carbohydrates, the author advises that an excess of carbohydrates and any kind of overfeeding be avoided in persons who have a predisposition for diabetes mellitus. Moreover, these persons should also avoid sedentary occupations with mental exertion, because those factors likewise seem to favor the development of diabetes. Finally it is important to prevent infectious diseases that are likely to elicit diabetes. Especial attention should be given to the tonsils, because repeated attacks of tonsillitis may impair the tolerance.

Sovetskiy Vrachebnyy Zhurnal, Leningrad

Sept. 15, 1939 (No. 17) Pp. 865-912. Partial Index

- Epidemiology of Grip. A. A. Sadov.—p. 873.
Clinical Course of Grip. M. D. Tushinsky.—p. 879.
*Carotene Therapy of Grip. M. S. Levinson and E. S. Gabrilovich.—p. 883.
Dysentery of Early Childhood. E. S. Klivanskaya-Krol.—p. 887.
Diagnosis of Malaria in Children. N. D. Nikolaev.—p. 895.

Treatment of Grip with Provitamin A.—Levinson and Gabrilovich administered pure crystalline carotene dissolved in a 0.5 per cent solution of sunflower seed oil by inhalation and by intranasal instillation to 226 patients with grip. Patients with acute catarrhal manifestations, such as cough, running nose, hyperemia of the throat and nose, bronchitis, rise of temperature, headache, pain in the extremities and general malaise, were selected for observation. Inhalations were given for from five to ten minutes once or twice daily, depending on the severity of the clinical picture for from three to four days. The intranasal medication consisted of instilling from four to five drops of carotene in oil once or twice a day for from four to five days. The treatment was begun on the first day of disease in 80 per cent and on the second day in 20 per cent. A control group was treated by means of the orthodox regimen with salicylates and intranasal medication with epinephrine, cocaine or menthol. In the group treated with carotene, 90 per cent got well within three days, whereas in the control group the same number of patients were well at the end of seven days. Beneficial effects, such as definite diminution of hyperemia of the nasopharyngeal mucosa and disappearance of headache and cough, were frequently noted after the first inhalation treatment. Follow-up study of 105 cases in the carotene treated group revealed that there were only six recurrent attacks one month later, while in ninety-two cases of the control group there were twenty-six recurrences of grip and eight of pneumonia. The local carotene therapy by the intranasal method appears to exert a favorable influence on the local inflammatory process, while the inhalation method introduces the provitamin to all organs of the body.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 5029-5128 (Oct. 21) 1939. Partial Index

- War Psychiatry. E. A. D. E. Carp.—p. 5036.
Lead Bismuth Line and Bismuth Line in Indonesians and Their Historical Identification. H. B. G. Breijer, G. O. E. Lignac and W. L. C. Veer.—p. 5041.
Paroxysmal Tachycardia Elicited by Pentamethylenetetrazol (Metrazol). F. Klein.—p. 5049.
*Surgical Treatment of Hypertrophic Pyloric Stenosis in Nurslings. R. Dijkhuizen.—p. 5053.
Application of Electropexia. A. P. Ketel.—p. 5060.

Treatment of Pyloric Stenosis.—In a brief description of the symptomatology of pyloric stenosis, Dijkhuizen stresses explosive vomiting after feeding and rapid emaciation of the child. The palpation of the tumor is not possible in all cases. The value of roentgenoscopy in the diagnosis of pyloric stenosis is estimated variously, but the author gained the impression that as a rule this method of examination can be dispensed with. Of the cases observed in his clinic, x-ray examination with barium sulfate was done in approximately one third before the operation was decided on. The author reports the results of the surgical treatment of hypertrophic pyloric stenosis in 130 infants who were observed at the clinic in Groningen since 1926. The children were subjected to pylorotomy according to Ramstedt's method. The operation was never refused on account of a poor general condition. The author stresses that during the operation the child must be guarded against cooling; he recommends that the infant be placed in cotton and be placed on an electrically heated pad. If the mucosa is accidentally injured in the course of the operation, the perforation should be closed with thin silk button sutures. Even if the mucosa is apparently intact, it should be carefully inspected for a possible injury. If the accidental perforation is properly closed, the prognosis is comparatively favorable, but if not, peritonitis is likely to develop. The author stresses the importance of the removal of the last obstructing muscle fibers on the duodenal side. The mortality rate in his material amounted to 5.4 per cent. It was possible to follow the later development of eighty of the children operated on. In these the results were favorable.

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VENEREAL AND NONVENEREAL GRANULOMAS OF THE VULVA

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Granulomas are circumscribed masses of granulation tissue formed in the course of the productive phase of inflammation. They may appear on the surface of ulcerations and in the wall of ulcers or may form in any area of tissue destruction with disturbed or incomplete regeneration. Granulomas are composed histologically of newly formed capillaries, fibroblasts, histiocytes and the cells of inflammatory exudates, and they vary in their microscopic pattern according to the infectious agent, the duration of the infection and the reactivity of the diseased organism. Granuloma and chronic inflammation are not completely synonymous processes, although they often appear intimately linked with each other (Lubarsch¹). They are most logically classified according to their etiologic factor, which in the majority of cases is an infectious agent. These infectious granulomas then can be differentiated according to the various types of organism, a distinction which is easy for some infections and difficult or even impossible for many others.

In the vulva infectious granulomas occur frequently, and their correct differentiation offers no little problem for the physician. In most textbooks their classification is confusing and often without etiologic or pathologic background, and with increased knowledge of the pathogenic bacteria of the external genitalia a reclassification is considered inevitable (Miller²). Many physicians and most of the laity still regard a genital lesion as a manifestation of a venereal disease, an erroneous point of view which undoubtedly has caused many unnecessary upsets in the social and emotional life of the patient. I have therefore stressed a subdivision of pudendal lesions according to venereal and nonvenereal infections as highly desirable since it emphasizes the fundamental difference in the diagnostic aspects of the two groups. I then define as venereal all those lesions which are infectious and are usually transmitted by intercourse. Syphilis, gonorrhea and chancroid are undoubtedly well recognized venereal infections which may produce pudendal granulomas. Venereal lymphogranuloma has only lately been recognized as a venereal disease by the legislation of some countries, although

its venereal character is definitely established (Stannus³). Inguinal granuloma and fusospirochetosis, which have been introduced in the American literature as the fourth and the fifth venereal disease, are not recognized universally as such, and many investigators deny their venereal nature (Greenblatt and co-workers,⁴ Campbell⁵). I have had no so-called "partner cases" in my group of fusospirochetal infections, but I believe that inguinal granuloma can justly be regarded as a venereal infection.

The differential diagnosis of the venereal and the nonvenereal granuloma, especially of the vulva, is admittedly extremely difficult and often impossible. Only with the aid of additional laboratory methods is one able to recognize the true cause of many of these chronic lesions. This is especially true in cases of mixed etiology such as are found not infrequently in this anatomic region, which is inhabited by so many thousands of micro-organisms. By methods which I have discussed in detail (von Haam⁶) I have analyzed a large group of consecutively observed acute and chronic lesions of the pudenda and have attempted to establish as much as possible their true etiology. Among these, 155 cases of chronic granulating lesions of the vulva have been observed. Although they represent material much too scanty for one to draw any statistical conclusions, their tabulation is interesting evidence of the diagnostic achievements with regard to the group of vulval granulomas which can be reached by the combined use of clinical and laboratory methods. It also represents one of the few attempts to segregate vulval granulomas according to their etiology, and their distribution is typical of the kind of patients who furnished the material, with the exception of gonorrheal infections, which were not always referred to the laboratory.

THE VENEREAL GRANULOMAS

Syphilis.—Syphilis was found to be the etiologic agent in eighteen cases of my series, or 11.6 per cent; three of these cases represented mixed infections and are discussed in a later section. Syphilitic granulomas may appear in any stage of the infection, although they were most common in the second stage of the disease. Primary chancres of the vulva leading to granulomatous, firm, indurated ulcerations were observed in five instances, and their characteristics are too well known to be discussed in this paper. Treponemas are not as readily found in hypertrophic forms of syphilitic chancre

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1. Lubarsch, Otto: *Entzündung: Pathologische Anatomie*, Jena, Gustav Fischer, 1921, p. 547.

2. Miller, N. F.: *Nonspecific Infections*, in Curtis, A. H.: *Obstetrics and Gynecology*, Philadelphia, W. B. Saunders Company, 1934, vol. 2, p. 516.

3. Stannus, H. S.: *A Sixth Venereal Disease*, Baltimore, William Wood & Co., 1933.

4. Greenblatt, R. B.; Torpin, Richard, and Pund, E. R.: *Extragenital Granuloma Inguinale*, *Arch. Dermat. & Syph.* 38: 358 (Sept.) 1938.

5. Greenblatt, R. B., and Wright, J. C.: *The Significance of Fusospirochetosis in Genital Lesions*, *Am. J. Syph., Gonorr. & Ven. Dis.* 20: 654 (Nov.) 1936.

6. Campbell, M. F.: *Etiology of Granuloma Inguinale, with a Report of Eighteen Cases*, *Ven. Dis. Inform.* 9: 93 (March) 1928.

6. von Haam, Emmerich: *The Laboratory Diagnosis of Venereal Lesions*, *Urol. & Cutan. Rev.* 42: 412 (June) 1938.

as in the acute ulcerative stage, although in no case was the diagnosis made without positive evidence in the microscope. Eight cases of secondary syphilids were observed, some of them in the typical form of broad condylomas. In all instances the dark field examination or the smear stained with Fontana's method again furnished the deciding clue for the diagnosis, although the correct diagnosis was suggested in many instances by the clinical examination. Two cases of tertiary syphilis of the vulva came under observation; in both gummatous ulcers were accompanied by induration and "cold" labial edema (Stookey and Polsky⁷). Smears from both lesions contained no organisms, and also the Wassermann reaction failed in one instance. The diagnosis of these spirochete-negative granulomas rests principally on the biopsy, which usually can be easily secured. The marked predominance of plasma cells, the perivascular type of infiltration and the intimal proliferation of the smaller and middle-sized vessels, together with the evidence of many newly formed capillaries, are characteristic of this disease. I should like to emphasize here that the lymph vessels do not partake in the inflammatory process and that the much publicized Langhans giant cells are not characteristic of a syphilitic infection. Because of the frequently super-

the epithelium which grows on a scanty stroma with a rich network of capillaries. A few foci of round cell infiltration can be noted. The epithelium is usually edematous and lacks keratinization. Bacteriologic examinations failed to reveal the gonococcus, even in cases of verified gonorrheal infections.

Chancroid.—The Ducrey bacillus is responsible more frequently for acute ulcerations of the vulva than for granulomatous lesions. However, granulation tissue appeared at the bottoms of the ulcerations in twenty-nine of my cases, justifying the term of chancroidal granuloma. The importance of a secondary infection of pyogenic organisms for the formation of chancroidal granuloma is still disputed. The histologic picture of chancroidal ulcerations is characterized rather by the absence of specific manifestations than by their presence. Pund and Greenblatt⁸ stressed the superficial necrosis and an acute perivascularitis and endovascularitis as characterizing the microscopic changes of chancroidal ulcers. I believe that these changes are rather significant of a superimposed infection with fusospirochetal organisms, which occurs frequently. I have had an opportunity to examine a few chronic ulcerations of a purely chancroidal nature and was impressed by the pyogenic nature of the granulation tissue, the multiple scattered polymorphonuclear leukocytes, the rather superficial and narrow margin of necrosis and the absence of any arteritic changes. In every one of these instances the granulation tissue did not extend beyond the margin of the ulcer and seemed to form only its granulating bottom. I made biopsies of two phagedenic ulcers which showed extensive necrosis and marked endarteritis. However, here, invasion of fusospirochetal organisms could be demonstrated and was interpreted as the true cause of this complication. Pure culture of the Ducrey bacillus has been obtained from small granulating ulcers, while larger and more destructive lesions always show mixed invasion. Since it is impossible to demonstrate the organism in the tissues, I do not believe that this lesion can be diagnosed from the biopsy without other clinical or bacteriologic evidence. A chancroidal infection should be suspected in any vulval lesions which histologically show ulcerations whose bottoms are formed by nonspecific granulation tissue.

Venereal Lymphogranuloma.—Granulomatous primary lesions (chancroidal type) are rarely observed (Bory⁹). In the later stages of this disease, however, extensive granulomas may appear, leading to severe mutilation of the vulva. Because of the preponderance of the Negro race among my patients thirty-seven cases of venereal lymphogranuloma of the vulva were observed. The disease represents a combination of ulcerations and of productive inflammation leading to tumor-like enlargement of the external genitalia. If the enlargement is the predominant feature of the lesion, one speaks of elephantiasis of the vulva; if the process is predominantly ulcerative, it is characterized as esthiomene. The two lesions are based essentially on an identical pathologic process: a severe disorder of the submucous lymphatics with subsequent disturbance in the tissue fluid circulation. To this may be superadded a specific injurious effect of the filtrable virus, which often shows a retrograde spread from the regional lymph nodes, and secondary bacterial invasion with the establishment of pyogenic processes in the diseased vulva.

8. Pund, E. R., and Greenblatt, R. B.: Specific Histology of Granuloma Inguinale, *Arch. Path.* 23: 224 (Feb.) 1937.
9. Bory, L.: Le chancere lymphogranulomateux, *Bull. Soc. franc. dermat. et syph.* 28: 451, 1921.

TABLE 1.—Classification of One Hundred and Fifty-Five Cases of Granuloma of the Vulva

	White	Negro	Total	Percentage
Venereal granulomas.....	27	77	104	67.1
Syphilis.....	4	11	15	9.6
Gonorrhea.....	5	6	11	7.1
Chancroid.....	10	19	29	18.7
Venereal lymphogranuloma....	7	30	37	23.8
Inguinal granuloma.....	1	11	12	7.9
Nonvenereal granulomas.....	10	21	31	20.0
Pyogenic granuloma.....	2	10	12	7.7
Saprophytic granuloma.....	4	4	8	5.2
Fusospirochetal granuloma....	3	7	10	6.5
Tuberculosis.....	1	0	1	0.6
Granulomas of mixed etiology....	2	9	11	7.1
Granulomas of unknown etiology..	2	7	9	5.8

imposed pyogenic infection, the deeper layer of the tissues should be studied for the specific changes. Demonstration of the specific organism in the tissues requires special technic and cannot be recommended for the general practitioner. In tertiary granulomas the demonstration of *Treponema pallidum* is difficult, while in the primary and secondary lesions its demonstration is easy and has distinctly diagnostic value. I have used the methods of Levaditi and Warthin and the silver mirror method of Steiner with equal success (von Haam⁶).

Gonorrhea.—In fifteen cases of my series a gonorrheal infection could be elicited as the probable cause of a granulomatous lesion of the vulva. This infection is of little importance as an etiologic factor of vulval granulomas since the thickly coated mucous membrane of the vulva is very resistant to the invasion of the organisms. I have observed small erosions around the female urethra which if persistent for some time assume a slightly granulomatous character. Pointed condylomas, which are found in the moist parts of the vulva and spread often over the labia majora and the perineum, originate frequently as a consequence of the irritative character of gonorrheal discharge. They are not specific for this infection. They are usually painful and may grow into immense cauliflower-like masses. The histologic picture shows a marked hyperplasia of

7. Stookey, P. F., and Polsky, Morris: Primary Syphilis in the Female, *Urol. & Cutan. Rev.* 42: 121 (Feb.) 1938.

Often elephantiasis and esthiomene are combined, affecting in different degree various parts of the vulva. The macroscopic picture is rather typical and can be well differentiated from that of other granulomas. The ulcerations never occur in a healthy-appearing mucous membrane, such as is the case in chancroidal or syphilitic infections, but the surrounding parts of the ulcers are fibrosed and edematous. Elephantiasis of the vulva usually occurs asymmetrically, often strictly unilaterally, and anatomic structures having a common lymphatic drainage are usually involved together. The mucous membrane of the hypertrophied parts has a normal appearance or is the site of superficial erosions. Bright red granulation tissue is absent, and the ulcers have a ragged edematous appearance. Involvement of the perineum and the anus is frequent, and anal tags are usually external evidence of a developing inflammatory stricture of the rectum.

The essential basis of these lesions is thrombo-lymphangitis and perilymphangitis with a tendency to spread from the infected glands into the surrounding tissue. The changes in the lymph vessels are not merely the effect of lymph stasis (Frei) but are an expression of an actively progressing virus disease, and the virus has been isolated from surgically removed portions of a diseased vulva (Coutts¹⁰). This chronic progressive lymphangitis leads to edema with fibrosis and explains the indurated enlargement of the affected parts. Because of insufficient nourishment and oxygenation, the surface epithelium becomes atrophic and ulceration occurs. Pyogenic organisms invading such ulcerated areas progress swiftly and lead to severe mutilation for the formation of fistulas and sinuses. A carcinoma may finally develop (Bernstein,¹¹ Pund and co-workers¹²).

Microscopically the picture is characteristic and has been well described by Gougerot and Carteaud.¹³ It consists in well circumscribed accumulations of neutrophilic leukocytes, eosinophils, mononuclear cells, plasma cells and endothelial cells around centers of homogeneous pink-staining material containing pyknotic and destroyed leukocytes. I occasionally observed giant cells in these small inflammatory foci, which confused the picture with syphilis. These "gommes de Nicolas Favre" are embedded in a stroma characterized by fibrosis and edema. The lymph vessels are dilated and filled with cellular exudate or clear lymph fluid. The dilatation of the lymph vessels is sometimes excessive and can be noted also beneath the surface epithelium. In the deeper parts of the section the dilatation of the lymphatics decreases somewhat, while the inflammatory reaction usually increases. Here the perilymphatic reaction around a lymph vessel close to an arteriole may give the impression of perivascular infiltrations. However, the cellular infiltration is more prominent on one side of the vessel (paravascular), and the intima of the vessels is not thickened as in syphilitic lesions.

The diffuse fibrosis which develops as a result of the chronic lymphangitis consists of bundles of thick collagenous fibers with a few cells. They develop from the depth of the lesion and do not reach quite to the

epithelial surface. The subepithelial zone is usually filled by a loose, very edematous fibrous tissue in which the just described inflammatory lesions develop.

The course of vulval granulomas produced by this infection varies greatly. It is often influenced by intercurrent secondary pyogenic infections but rarely is the cause of a fatal complication. However, since the deeper lymph glands are usually involved, an inflammatory stricture frequently develops simultaneously in the rectum, which represents a serious threat to the health of the patient. The treatment of choice in the elephantiasis or esthiomene of the vulva is surgical removal of the destroyed parts. This is recommended not only in order to free the patient of this mutilating lesion but in order to remove an actual focus of infection, preventing the spreading of the virus into other parts of the body. Cases of severe venereal lymphogranuloma of the vulva require several plastic operations following the removal of the new growth.

Inguinal Granuloma.—This is an infectious disease of the pudenda which is widespread in the tropical countries and in the southern parts of the United States. It is conveyed by sexual intercourse and by autoinoculation, and its etiology is definitely linked with a peculiar encapsulated organism found extracellularly and intracellularly in the pus from the lesion and known as Donovan's organism. The disease is widespread among the Negro population of New Orleans, and twelve cases were among my series. The disease differs from other venereal infections in that it is predominately granulomatous in character from the beginning.

Macroscopically, it usually starts as a small papule from 1 to 4 cm. in diameter which is located on the labia minora, the skin of the mons pubis and the inguinal or perineal folds. In a few weeks this nodular lesion develops into the most commonly observed form of inguinal granuloma, the serpiginous ulcer. This starts with an excoriation of the squamous epithelium over the primary nodule and develops with abundant production of luxuriant bright red granulation tissue. The latter has the tendency to spread along the various folds of the external genitalia, and, although often painless, the lesion is annoying because of its abundant seropurulent discharge. I most frequently observed it on one of the labia, and it usually produced a contact lesion on the other side after some time. In most of the cases the ulceration, covered with this granulation tissue, shows only a tendency to spread along the surface. In a few instances, however, it will lead to severe deep mutilating ulcerations, which may expose the muscles of the bottom of the pelvis and destroy the entire vulva. In this case general malaise with fever and secondary anemia is marked, and the bacteriologic examination of the lesion reveals an abundant flora of all types of bacteria, among them the fusospirochetal group, while the characteristic Donovan bodies sometimes completely disappear from the surface secretion. It is my impression that this sudden "turn for the worse," which usually indicates this change, is the result of a secondary infection, perhaps fusospirochetosis (von Haam and D'Aunoy¹⁴). These deep ulcerations may lead to generalized sepsis and death.

Another kind of vulval granuloma produced by this infection is the hypertrophic type, which was observed in three instances. The surface of this lesion has an uneven buckled appearance, and the skin shows exten-

10. Coutts, W. E., and Martini Herrera, John: Experimental Transmission of Lymphogranuloma Inguinale to Guinea Pigs, *J. Trop. Med.* 38: 53 (March 1) 1935.

11. Bernstein, Phineas: Lymphogranuloma Inguinale, Carcinoma and Syphilis: A Triad of Diseases Occurring in One Patient, *Am. J. Obst. & Gynec.* 20: 718 (May) 1935.

12. Pund, E. R.; Greenblatt, R. B., and Huie, G. B.: The Role of the Biopsy in Diagnosis of Venereal Diseases, *Am. J. Syph., Gonorr. & Ven. Dis.* 22: 495 (July) 1938.

13. Gougerot, H., and Carteaud, A.: Les débuts des syndromes recto-génitaux élephantiasiques: L'élephantiasis localisée; la gomme du "Nicolas Favre," *Ann. d. mal. vén.* 28: 881 (Dec.) 1933.

14. von Haam, Emmerich, and D'Aunoy, Rigney: Is Lymphogranuloma Inguinale a Systemic Disease? *Am. J. Trop. Med.* 16: 527 (Sept.) 1936.

sive scars from previous ulcerations. Daniels¹⁵ suggested that a blockage of the lymphatics is sometimes produced by the inflammatory process and that this in turn will lead to the hypertrophic lesion. The differential diagnosis between this lesion and elephantiasis of the vulva due to venereal lymphogranuloma rests principally on the condition of the skin covering the hypertrophic parts. In venereal lymphogranuloma the skin is thick but otherwise fairly normal, while in inguinal granuloma the skin is either severely ulcerated or shows atrophy and extensive scar formation.

A fifth group of lesions which I have observed represents the cicatricial type. In contrast to the scars representing a healing stage of the disease these scars are hypertrophic and firm and show a tendency to spread. On the basis of my histologic studies I have reached the conclusion that they do not represent a healed stage of the disease but are merely a keloid-like reaction of the diseased subcutaneous tissue. The histologic picture of inguinal granuloma is sufficiently characteristic to be recognized as typical for the infection. A short-lasting stage of subcutaneous infiltration by plasma cells, leukocytes and large mononuclear cells with epithelial hyperplasia (Gage) is followed by the development of the typical granulation tissue. It consists of numerous capillaries with an abundant number of leukocytes, plasma cells and large mononuclear cells. Some of the latter are outstanding for their foamy vacuolated plasma and have been described as typical granuloma cells by Goldzieher and Peck¹⁶ and Pund and Greenblatt.⁸ I have identified these cells with those in the smears containing the organism and the plastin bodies and regard them as endothelial cells. In the deep ulcerations the granulation tissue is largely destroyed by a necrotic process, and only a small zone of demarcation can be found between the necrotic mass and the healthy tissue. Leukocytes are often entirely absent in the necrotic area. In the hypertrophic lesions an extensive fibrous reaction in the subcutaneous tissue is observed which includes foci of active inflammation with numerous foamy endothelial cells. The lymphatics are somewhat dilated. The surface epithelium shows a varying picture of atrophy with loss of papillae and regenerative hyperplasia. In the cicatricial lesions of inguinal granuloma the characteristic changes consist of thick bundles of a collagenous fibrous tissue which includes small foci of characteristic inflammatory reaction. The collagenous tissue resembles closely the keloid masses often observed in scars of Negroes. The best method of diagnosis is the demonstration of the characteristic organism. It is observed in smears of from 60 to 80 per cent of the lesions and appears as a small encapsulated body the nucleus of which resembles a small curved bacillus. With extremely acute involvement these organisms are not encapsulated and can also be found extracellularly. They often fill vacuolated places in the plasma of the mononuclear cells and are sometimes present in such numbers that they completely obscure the structure of the cells. In the chronic condition the encapsulated forms seem to prevail. The organisms can be stained in the tissues by the methods of Wright and Giemsa or with cresyl violet. They were present in 100 per cent of my cases and formed the principal criterion of my diagnosis. Pund and Greenblatt reported their impregnation with silver stains

and stressed their affinity for hematoxylin. The latter observation is not sufficiently characteristic, according to my experience, to make other stains superfluous. In true scars of inguinal granuloma no organism could be demonstrated by either method.

THE NONVENEREAL GRANULOMAS

Granulomatous lesions caused by a nonvenereal infection of the vulva were present in thirty-two cases, or 20 per cent of my series. They comprised the groups of tuberculous, fusospirochetel, pyogenic and saprophytic granulomas.

Pyogenic granulomas are produced by persistent infection of the vulva with a pyogenic organism of comparatively low virulence. They usually develop after an acute pyogenic lesion such as a small furuncle, erysipelas or an infected herpes blister and are characterized by a pale soft painful ulceration or a sinus with indurated edges and a watery purulent exudate. Streptococci, staphylococci or colon bacilli are seen abundantly in the smear and can be isolated from a deep scraping of the lesion. In the history of the lesion the acute stage of the pyogenic infection can usually be elicited. These granulomas usually heal spontaneously, leaving a small scar.

Fusospirochetosis of the vulva was present in ten cases as a primary infection of the lesion, while the fusospirochetel organism was demonstrated in eight granulomas of mixed etiology. The importance of this group of organisms for genital lesions has been discussed recently by Greenblatt and Wright,⁴ who observed fusospirochetosis only as a superimposed infection and could not accept it as a disease *sui generis*. I observed thirty-seven cases of primary fusospirochetosis among 622 cases of pudendal lesions studied in the laboratory for venereal diseases. After a careful restudy of their histories I agree with Greenblatt that one is at present not justified in including this disease among venereal infections. Primary fusospirochetosis of the vulva can be the result of autoinoculation as well as the result of sexual contact. Considering the painfulness of the lesion, one would think intercourse rather difficult for patients suffering from this infection. A generalized weakened constitution such as seen in patients recovering from a severe sickness or in persons of poor economic circumstances is probably a much more important factor for the establishment of the infection than the exposure of the vulva to the organism, which, as Pilot¹⁷ could demonstrate, inhabits as harmless saprophyte the genitalia of many persons of both sexes. Primary lesions produced by this group of micro-organisms present acute necrotizing ulcerations which do not deserve the name of granulomas. In fact, granulation tissue is conspicuous by its absence during the acute stage of the disease. Only after the infection has subsided does one see regenerative granulation tissue attempting to fill the defect produced by the disease. During these stages I could still demonstrate fusiform bacilli in large numbers in the exudate and in the tissue sections, while the spirochetes had disappeared. Because of this granulating healing stage of fusospirochetosis I have included the infection among the group of granulomas of the vulva. Saprophytic granulomas of the vulva are caused by organisms of a mixed variety which may inhabit the vagina normally and become irritating only by marked increase in number. In this group belong the Monilia or yeast infec-

15. Daniels, C. W.: *Ulcerating Granuloma of the Pudenda*, in Allbutt, Thomas Clifford, and Rolleston, Humphry D.: *A System of Medicine*, London, Macmillan Company, 1907, vol. 2, p. 708.

16. Goldzieher, M., and Peck, S. M.: *Granuloma Venereum (Inguinale): Studies on the Etiology and Pathology*, Arch. Path. & Lab. Med. 1: 511 (April) 1926.

17. Pilot, Isidore: *The Occurrence of Fusiform Bacilli and Spirochetes Associated with a Foreign Body in the Vagina*, Am. J. Obst. & Gynec. 18: 224 (Dec.) 1922.

tions (Plass, Hesselstine and Borts¹⁸), infections with *Bacillus crassus* (Lipschütz¹⁹) and diphtheroid bacilli, *Trichomonas* infections (Karnaky²⁰) and others. They produce an epithelial irritation of the vagina, and the increased amount of discharge from the vagina will lead sometimes to epithelial excoriations of the vulva. These excoriations under the influence of the growth-stimulating serum are quickly covered with granulation tissue, which may assume the shape of pointed condylomas or of flat patches of luxuriant flesh. Removal of the irritating agent will cause a quick drying up of these granulating lesions.

GRANULOMAS OF MIXED ETIOLOGY

Pund and Greenblatt have pointed out in a careful study the frequency of pudendal lesions of mixed etiology. Twenty-eight per cent of their series of genital ulcerations were complicated by other conditions. In our studies we have stressed similar observations in cases of coincidental venereal infections in which

nososis of pudendal lesions. I shall limit the discussion of table 2 to the emphasis of a few striking points. Cases 1, 3, 5, 6, 8 and 9 demonstrate that one reaction, though it is positive, has comparatively little diagnostic value and can lead to many erroneous conclusions. I cannot sufficiently emphasize that a positive Wassermann reaction or a positive cutaneous reaction has really less value for the diagnosis of a pudendal lesion than a negative reaction. But also the latter may be erroneous, as seen from case 8. To decide the primary cause of a pudendal lesion in the presence of several positive results is sometimes extremely difficult and will often require a careful consideration of the clinical history with regard to the development of the present lesion and to previous venereal infections. A thorough study of the biopsy specimen with additional use of bacteriologic tissue stains may give perhaps the best single lead for the diagnosis. The question as to when the different infections demonstrated in a vulval lesion were

TABLE 2.—Local and Systemic Observations in Granulomas of Mixed Etiology

Case	Race	Age	Smear, Dark Field, Culture, Animal Inoculation, Biopsy	Wassermann	Frei	Dmelcos	Diagnosis
1	N	18	Hypertrophy of labia and clitoris; smear negative for spirochetes; biopsy typical for venereal lymphogranuloma	Pos.	Pos.	Pos.	Venereal lymphogranuloma of vulva in syphilitic patient
2	N	29	Granulating ulcer on labia; smear positive for Donovan bodies; biopsy typical of lymphogranuloma	Neg.	Pos.	Neg.	Acute inguinal granuloma superimposed on venereal lymphogranuloma
3	N	21	Granulating tumor; smear positive for spirochetes; biopsy typical of secondary syphilis	Pos.	Pos.	Neg.	Condyloma latum (syphilitic) in patient with old venereal lymphogranuloma
4	W	38	Deep ulcer in fourchet; smear positive for Vincent's organisms; no biopsy	Neg.	Neg.	Pos.	Chancroid with superimposed fusospirochetosis
5	N	29	Serpiginous deep ulcer of perineum; smear positive for Donovan bodies and numerous spirochetal organisms; no biopsy	Pos.	Pos.	Neg.	Inguinal granuloma and fusospirochetosis in patient with syphilis and venereal lymphogranuloma
6	N	46	Marked hypertrophy of labia with ulceration; smear negative; biopsy typical for lymphogranuloma	Pos.	Pos.	Neg.	Venereal lymphogranuloma in patient with syphilis
7	N	17	Serpiginous deep ulcer; smear positive for Vincent's organisms; biopsy showed Donovan bodies in tissue	Neg.	Neg.	Neg.	Inguinal granuloma with superimposed fusospirochetosis
8	N	25	Granulating ulcer on vulva; smear positive for Durey bacillus; biopsy, nonspecific	Neg.	Pos.	Neg.	Acute chancroid in patient with old venereal lymphogranuloma
9	W	32	Large necrotic ulcer on labia; smear positive for Vincent's organisms; biopsy, marked necrosis	Pos.	Neg.	Pos.	Chancroid with fusospirochetosis in syphilitic patient
10	N	24	Hypertrophy of labia with acute inflammation and numerous pustules; smear, hemolytic streptococcus; no biopsy	Neg.	Pos.	Neg.	Venereal lymphogranuloma with pyogenic infection
11	N	22	Large ulcerating granuloma of vulva; smear positive for Donovan bodies; biopsy, suggestion of syphilitic infection	Pos.	Neg.	Neg.	Syphilitic of vulva with superimposed inguinal granuloma

the Frei test gave a positive reaction (D'Aunoy and von Haam²¹); in 20.2 per cent of these cases there was a positive Wassermann reaction, in 3.2 per cent a gonorrheal infection and in 8 per cent a chancroidal infection. To unravel the complicated diagnostic problems presented by some pudendal lesions I cannot stress enough the great value of laboratory diagnosis such as furnished by cutaneous tests, serologic examinations, bacteriologic investigations and biopsies (von Haam and Lafferty²²). In my series of 155 granulomatous lesions of the vulva I have encountered eleven lesions in which more than one infectious agent could be suggested. I have tabulated these cases and want to point out briefly the diagnostic methods used.

Every one of these cases furnished an interesting diagnostic problem, and this small group clearly demonstrates the value of laboratory methods in the diag-

acquired is sometimes difficult to answer. In case 10 it could be elicited that the patient had had venereal lymphogranuloma for some time before the pyogenic infection developed. I know patients who contracted syphilis, chancroid and gonorrhea during the same intercourse; I have learned too, however, that patients of this social stratum with a pudendal lesion do not refrain from intercourse as long as pain does not force abstinence. So a secondary infection may frequently be added later, as can be deduced in case 11. To evaluate the importance of the several etiologic factors for the development of the lesion is again difficult. The best criterion will be a biopsy, which demonstrates the most important type of reaction. Therapeutic tests could also be helpful as long as one is able to choose selective methods. Since my patients, however, naturally want to be cured as quickly as possible, such methods have proved impracticable, and I have treated all infections for which positive evidence was present regardless of their possible importance for the pudendal lesion. By this method I have obtained most gratifying and often surprising results. The importance of treating secondary fusospirochetosis in any vulval granuloma, which has been stressed by Pund and Greenblatt, must be emphasized again on the basis of my experience.

18. Plass, E. D.; Hesselstine, H. C., and Borts, I. H.: *Monilia Vulvovaginitis*, Am. J. Obst. & Gynec. 21: 320 (March) 1931.

19. Lipschütz, B.: *Ulcus vulvae acutum*, in Jadassohn, J.: *Handbuch der Haut- und Geschlechtskrankheiten*, Berlin, Julius Springer, 1927, vol. 2, p. 392.

20. Karnaky, K. J.: *Gonorrheal Vulvovaginitis of Children*, Arch. Pediat. 54: 54 (Jan.) 1937.

21. D'Aunoy, Rigney, and von Haam, Emmerich: *Granuloma Inguinale*, Am. J. Trop. Med. 17: 747 (Sept.) 1937.

22. von Haam, Emmerich, and Lafferty, Charles: *The Etiology of Venereal Lesions*, New Orleans M. & S. J. 89: 683 (June) 1937.

Patient 5 responded to antimony and potassium tartrate treatment only after the fusospirochetosis was successfully treated with neoarsphenamine, which drug also was used against the latent syphilitic infection. In order not to obscure the clinical picture, I advise withholding any type of treatment except soaking of the lesion in warm saline solution until all laboratory tests have been completed and a final clinical diagnosis has been reached. This plan not only makes it possible to repeat certain tests in case of doubtful results but also proves the most economical method and in spite of the short delay of a few days promises the best results.

SUMMARY AND CONCLUSIONS

The macroscopic and microscopic pictures of 155 cases of infectious granulomas of the vulva were observed in the laboratory for venereal diseases in New Orleans.

Because of the fundamental difference in diagnosis and therapeusis a subdivision of infectious granulomas into the groups of venereal and nonvenereal lesions is recommended.

The presence of several etiologic factors in one pudendal granuloma could be proved in eleven cases. Various tests for the correct diagnosis of granulomas of mixed etiology have been evaluated.

Proper treatment of a granuloma of the vulva should be deferred until a complete diagnosis of the lesion has been reached. This will be greatly facilitated by the liberal use of laboratory methods.

ATROPHY OF THE VULVA

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The vulva, or the external female genitalia, is under endocrine control and manifests secondary sex characteristics. At birth the labia, the prepuce and the clitoris may appear rather prominent, probably as a result of maternal endocrine stimulation. Similar evidence of estrogenic stimulation may be seen in the breasts and in the internal genitalia of the newborn. These changes disappear rapidly after birth. During infancy and childhood the labia minora and majora remain small, of tissue paper thinness and almost transparent (fig. 1). With the onset of puberty these structures begin to grow rapidly and gradually take on normal adult appearance. The labia minora develop as separate distinct structures, the labia majora become more rounded and fuller and stand out more prominently, and the preputial folds and the clitoris become sharply demarcated. The growth of labial and pubic hair in the typical feminine pattern completes the development of the normal adult vulvar appearance.

In the event of a failure of normal sex development as a result of pathologic change in the anterior lobe of the pituitary gland or in the ovaries, the vulvar structures may fail to develop, remaining in their pre-

pubertal state. It is not uncommon to see this evidence of sexual immaturity in adult women with primary amenorrhea.

Following the termination of the active reproductive years, regression begins to take place in the vulvar structures. Slowly, over a period of years, these secondary sex characters become changed. The *mons veneris* becomes less prominent, the labia majora shrink and flatten out, largely as a result of a loss of subcutaneous fat, and the labia minora may completely disappear, remaining only as small rudimentary folds near the urethra. The distribution of hair becomes more and more sparse (fig. 2). During the early years of the menopause these atrophic changes may be barely visible, but they become more marked with advancing age. The skin over the vulva becomes thin, shiny and occasionally parchment-like in consistency. The normal elasticity is lost, which results in an increasing narrowing of the vulvar orifice of the vagina. These physiologic atrophic changes of themselves produce no untoward symptoms but predispose to pathologic conditions.

The vulva, therefore, is under ovarian influence, and its normal state must be dependent on normal endocrine activity. It does not have the same embryologic origin as do the fallopian tubes, the uterus and the upper part of the vagina, but its normal and pathologic states are subject to endocrine activity. Phylogenically, the vulva in woman may have the same relationship to the reproductive organs as the sex skin of the higher apes.

The natural or the artificially induced climacteric initiates atrophic changes in the vulvar structures. The rapidity of development of these regressive changes is usually slower than those which involve the upper part of the vagina, the uterus and the tubes, but they are continuous year by year. The physiologic changes do not lead directly to abnormal symptoms or discomfort. However, they predispose to the development of pathologic conditions which give rise to clinical entities that demand attention.

Rapid and premature atrophic changes in the vulvar structures, particularly when these occur in young women as a result of an artificially induced climacteric, may result in serious narrowing of the orifice of the vagina and thereby lead to dyspareunia. Vaginal stenosis is a rather common sequel of radiation therapy in the treatment of carcinoma of the reproductive organs. The condition often involves women in their late thirties and early forties, when sex life is still an important factor. In these women the vulvar atrophy has a twofold origin, in the artificial menopause as well as in the direct action of the radiation to the tissues. The accompanying illustrations show the character of these changes (figs. 3, 4, 5, 6 and 7). The superficial epithelium shows the usual atrophy. There is present a marked deposition of collagenous substance in the subepithelial tissues. The blood vessel lumens are small and often completely obliterated, the vessel walls are thickened, and the elastic and muscular fibers have been largely replaced by hyalin. These vascular changes decrease the blood supply and hasten the atrophic changes.

PATHOLOGIC CONDITIONS OF THE VULVA

The physiologic atrophy of the vulvar structures predisposes to pathologic conditions. The atrophic skin is easily bruised as a result of minor trauma, coitus or irritating and infectious contacts. Repeated trauma leads to minute cracks and fissures, which easily become infected by various organisms. Soon a mild infection

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of the skin and subcutaneous tissue is present. It is this infection that causes the symptom of itching. Constant itching leads to scratching, with more trauma to the delicate cutaneous surfaces. This process continued over a period of months or years may lead to the onset of chronic atrophic dermatitis of the vulva.

Three distinct stages have been described in this disease. In the initial stage the inflammatory symptoms predominate (fig. 8). The entire vulva is swollen, red, bruised and painful. The various structures stand out distinctly as a result of the edema. This may be so marked that blebs may form superficially. Petechial hemorrhages produced by the scratching give a mottled appearance to the skin. The structures are painful to the touch, and a vaginal examination may provoke pain and increase the hemorrhagic extrav-

perineum and the skin posterior to the anus. It has no tendency to spread laterally. The limited area involved in chronic atrophic dermatitis of the vulva bears out the endocrine origin of the atrophy.

The final stage of the disease is the chronic stage, lasting years (fig. 10). Slowly the skin over the

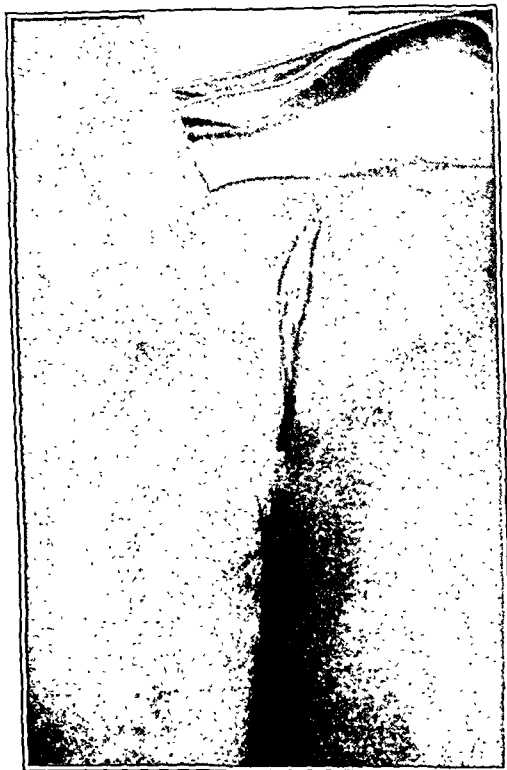


Fig. 1.—The vulva of a child 6 years old.

asation into the tissues. The patient complains of pain and of the intense itching, which may continue day and night. This acute inflammatory condition may last several weeks, months or even longer, but sooner or later it tends to subside and become subacute or chronic.

The second stage is chiefly characterized by the onset of atrophic changes (fig. 9). The skin of the vulva becomes indurated and thickened owing to increased thickness of the keratin layer. The usual elasticity disappears. The color may be a mottled gray with numerous reddish to pink areas where petechial hemorrhages are being absorbed slowly. The atrophy is best seen in the region of the clitoris, where the preputial folds flatten out and the clitoris gradually disappears under the atrophic hood.

The entire process is definitely limited to the non-hairy portion of the vulva. It is sharply demarcated at the mucocutaneous junction with the vagina. In its progress it may extend posteriorly to involve the

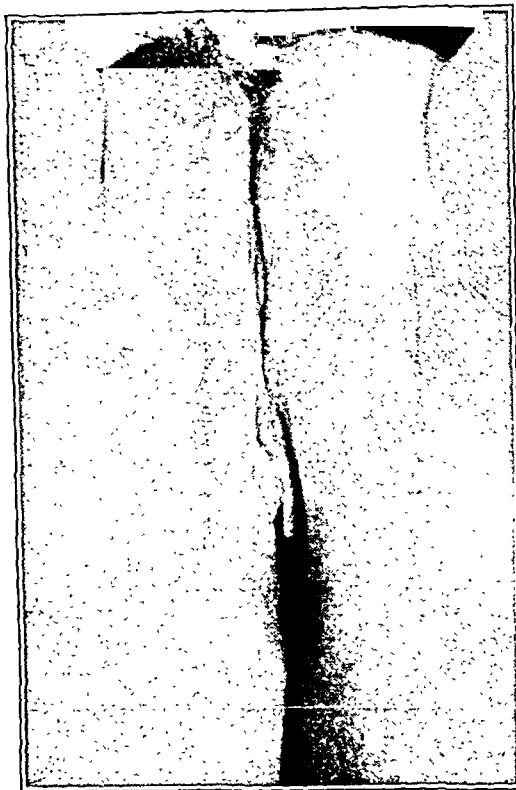


Fig. 2.—The vulva of a woman 57 years old, seven years after the onset of the menopause.

entire vulva becomes smooth, glistening, semitranslucent and parchment-like. Its sharp demarcation from the adjoining skin is striking. The preputial folds and



Fig. 3.—A section of the vulva of a woman eleven years after the onset of a natural menopause. There is an increased thickness of the keratohyaline layer. The papillae still are rather prominent.

clitoris have completely disappeared. The labia minora and majora have flattened out and have disappeared as structures. They may still be identified near the urethra. The vaginal orifice is narrowed, and gentle examination causes the skin to crack and superficial

petechiae to develop. Trauma or simple contact of any kind with the vulva may cause petechiae to form.

It may be difficult to place the process in each patient in the proper stage, for there may be a considerable variation in the same person. The disease is progressive and slowly passes through transitory stages.



Fig. 5.—A vessel in the subepithelial tissues showing vascular changes.

An acute infection may be superimposed on the chronic stage, altering the typical picture. Patients are rarely observed over a long enough period for one to note the continuous retrogressive processes of this condition. Leukoplakic areas may develop anywhere on the vulva, particularly about the clitoris. These discrete whitish or grayish white plaques have given rise to the names leukoplakic vulvitis (Taussig¹) and leukokraurosis (Graves²) for this condition.

CLINICAL COURSE

Pruritus is the symptom which ultimately brings the patient to the physician. This discomfort is limited to the area of the vulva involved by the disease. At first the itching may be intermittent but it soon becomes

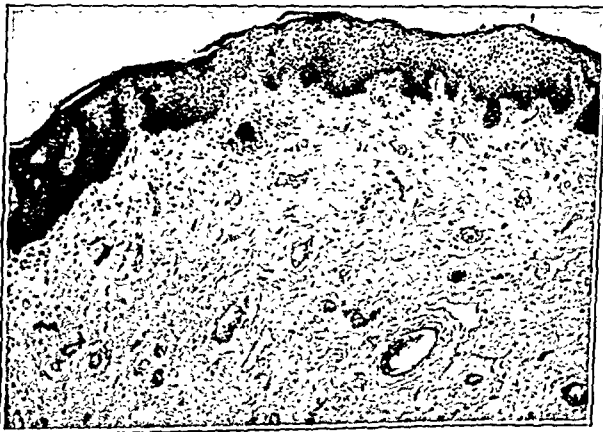


Fig. 6.—A section of the vulva of a woman in whom an artificial menopause was induced by irradiation seven years previously.

constant. It does not respond to the usual antipruritic lotions. It may keep the patient awake night after night until mental and physical exhaustion develops.

In a few instances burning rather than itching is the most common complaint. During the acute inflammatory stage the structures may be painful to the touch or to the clothing which comes in contact with the vulva. This tenderness disappears with the subsidence of the inflammation. During the onset of this condition dysuria may likewise be present. This symptom is the result of a mild inflammation of the external urethral orifice.

The progress of the disease is slow, often lasting several years and longer. There may be periods of remission during which the pruritus subsides. Usually this condition progresses until measures are instituted for its relief.



Fig. 8 (K. M.).—The early stage of chronic atrophic dermatitis of the vulva. The structures are swollen, red, bruised and painful. Numerous petechial hemorrhages are present.

DIAGNOSIS

The typical case of chronic atrophic dermatitis of the vulva need present no diagnostic problem. The vulva should be examined by subdued or indirect light to throw into relief the sharply circumscribed atrophic whitish area of skin. The characteristic distribution, its sharp demarcation and the typical appearance, especially of the prepuce and clitoris, are sufficient to establish a diagnosis.

During the initial acute inflammatory stage of this disease it may be necessary to rule out other conditions which are associated with itching of the vulva.

Yeast vulvitis is one of the most common infections which cause pruritus of the vulva. This condition is often associated with diabetes, so that urinalysis and a blood sugar determination will be of diagnostic importance. This infection involves the hairy portions of the vulva and tends to spread to the groins and down over the perineum. The surfaces involved are likely to be moist and inflamed, with considerable superficial macer-

1. Taussig, F. J.; *Am. J. Obst. & Gynec.* 18:472-503 (Oct.) 1929; *Atrophic Diseases of the Vulva*, in Curtis, A. H.: *Obstetrics and Gynecology*, Philadelphia, W. B. Saunders Company, 1933, vol. 3, p. 623; *Am. J. Obst. & Gynec.* 31:746-754 (May) 1936.
2. Graves, W. P., and Smith G. V.: *Kraurosis Vulvae*, *J. A. M. A.* 92:1244-1252 (April 13) 1929.

ation of epithelium. Inoculation of scrapings from the surface epithelium will result in a growth of monilia on Sabouraud's medium.

Fungous infections are occasionally seen in the groins of women who complain of pruritus. These organisms rarely involve the vulva directly. The typical appearance of the lesion, the asymmetrical distribution and microscopic examination of superficial scrapings will establish the diagnosis.

Parasites such as pediculi or pinworms may likewise produce itching of the vulva. Close inspection of the vulvar hair and cutaneous surfaces will usually reveal these organisms.

Neurodermatitis is a neurogenic lesion of the skin often associated with pruritus. It rarely involves the

The likelihood that a carcinoma will develop in this abnormal locality can be prevented only by the removal of the chronically inflamed tissue which predisposes to malignant change. Surgical removal of the vulva



Fig. 9 (M. B.).—The second stage characteristics of chronic atrophic dermatitis of the vulva predominate. The skin is indurated, thickened and leathery. The labial structures have almost disappeared. The preputial folds are still somewhat swollen and prominent. Note the sharp demarcation of the involved area, at the hair line and its extension over the perineum to the anal margin.

vulva, but when it does it is a part of a more generalized distribution of the lesions. It is found in nervous and unstable individuals. The cutaneous lesion is not characteristic in appearance.

Carcinoma of the vulva may occur at any stage of chronic atrophic dermatitis of the vulva (fig. 11). It has been suggested that leukoplakic areas predispose to the development of malignant tumors. The atrophy of the vulvar skin and the presence of chronic irritation in the form of infection certainly predispose to the development of an epithelioma. In the early stages of the neoplasm one can easily recognize the chronic atrophic dermatitis. This complication is the most serious feature of the disease and thoroughly justifies the eradication of all possible sources of irritation.

Treatment.—The therapeutic care of chronic atrophic dermatitis of the vulva has changed little in recent years.



Fig. 10 (A. A.).—In this case atrophic manifestations are most marked. Labial structures have entirely disappeared. The clitoris can just be seen and it will ultimately disappear. The skin is whitish, thin and glistening.



Fig. 11 (M. G.).—A small polypoid squamous cell carcinoma of six to eight weeks' duration superimposed on chronic atrophic dermatitis of the vulva.

remains the most satisfactory treatment for patients who have marked evidences of the disease. The results of surgical intervention are excellent (figs. 12, 13 and 14). The patients are usually elderly women for whom

marital relations are no longer important, so that possible introital stenosis need not be considered. The careful removal of the vulvar tissues and suitable reconstruction will leave a useful vagina when this is important. Vulvectomy carries little risk even in the old and debilitated, for it is a superficial removal of tissue and if necessary can be carried out with the area under local anesthesia.

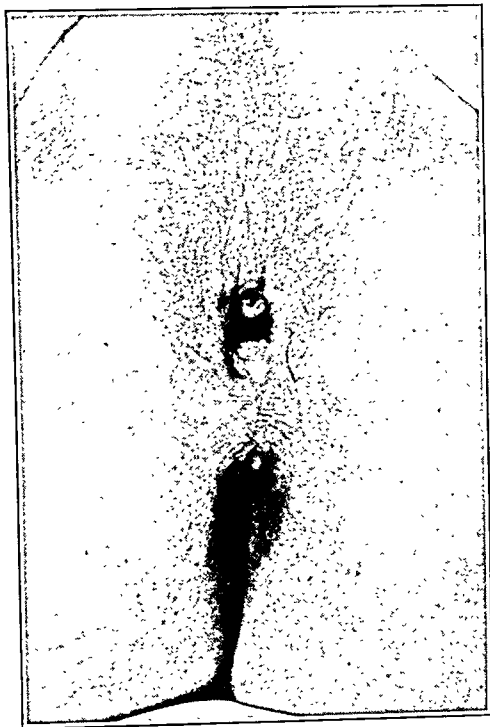


Fig. 13 (M. M.).—Postoperative result following vulvectomy performed two years previously. On examination the introitus easily admits two fingers, providing a functional vagina.

It is interesting to note that in our clinic palliative therapy has been given up in the last four years. No suitable local therapy has been found. It is not sufficient to allay the pruritus, but all sources of irritation should be removed. This can be accomplished only by a removal of the involved skin. If the lesion has extended around the anus to the posterior skin, it may be well to undertake the vulvectomy in two stages. During the first stage the vulvar skin proper can be removed. At a later date the skin posterior to the anus can be dissected away. Such a procedure may result in a smoother convalescence.

The operative procedure should take into consideration the blood supply to tissues. There should be no unusual pull on united skin edges, for these will become necrotic or heal poorly. Good mobilization of apposed surfaces will result in primary union. Rarely will any difficulty be encountered with the urethra, for a safe margin of normal mucosa is usually present.

Irradiation has been given up because it provided few, if any, cures. Occasionally temporary relief from the itching occurs, but the progressive cutaneous changes continue, and the danger of malignant disease still remains.

Endocrine therapy has gained in popularity in the last few years. Peters and Macbeth,³ Tscherne,⁴ Foss⁵ and a few others reported small series of cases treated

with estrogens with satisfactory results. The dosage and mode of administration varied considerably. To some patients estrogens were administered parenterally, and in a few cases they were given by inunction or as vaginal suppositories. The dose varied from several thousand international units to as much as 250,000 units. The direct local application of estrogens may have some merit in the light of a recent report by MacBryde⁶ showing that the local effect of estrogens was more pronounced than the general effect.

Foss⁷ recently reported a series of forty-eight cases adequately treated with estrogenic substance. His patients received estradiol benzoate by parenteral administration and locally in the form of an ointment and as suppositories. He started with 10 to 25 mg. doses and diminished the amount as the patients improved. The patients received vitamin A and hydrochloric acid in addition. He concluded that few of the patients received complete and lasting comfort and nearly all complained of slight relapses which could be brought under control by further endocrine therapy. The more severely affected patients required almost continuous endocrine therapy to maintain comfort.

In our first series of cases we⁸ reported on the use of estrogenic therapy. Our conclusion was that it had little value in the treatment of chronic atrophic dermatitis of the vulva. Since this earlier report crystalline estrogens have become available, so that large doses can now be administered. The reports in the literature are not entirely convincing as to the efficacy of such treatment. It will require a careful evaluation in a large



Fig. 14 (M. M.).—Tissues removed at vulvectomy for chronic atrophic dermatitis of the vulva.

series of cases to determine whether estrogenic medication has a place in treatment. To be entirely satisfactory such medication must result in a disappearance of all evidences of irritation and much of the abnormal

3. Peters, A. D. K., and Macbeth, A. N.: *Proc. Roy. Soc. Med.* 30: 1330-1333 (Sept.) 1937.
4. Tscherne, Erich: *Zentralbl. f. Gynäk.* 62: 169-172 (Jan. 15) 1938.
5. Foss, G. L.: *J. Obst. & Gynaec. Brit. Emp.* 43: 1091-1113 (Dec.) 1936.

6. MacBryde, C. M.: *Production of Breast Growth in Human Females*. *J. A. M. A.* 112: 1045-1049 (March 18) 1939.
7. Foss, G. L.: *J. Obst. & Gynaec. Brit. Emp.* 46: 271-277 (Apr.) 1939.
8. Adair, F. L., and Davis, M. Edward: *Surg., Gynec. & Obst.* 61: 433-442 (Oct.) 1935.

cutaneous change. If this does not occur, the factors which predispose to the development of cancer of the vulva still remain.

Swift⁹ found that patients with vulvar itching and atrophic changes of the skin were likely to manifest

9. Swift, B. H.: J. Obst. & Gynaec. Brit. Emp. 43: 1053-1077 (Dec.) 1936.

achlorhydria when the stomach content was analyzed. He collected a series of cases in which the achlorhydria was treated by diluted hydrochloric acid and vitamin A in the form of cod liver oil. He reported excellent results for the majority of the patients. They were relieved of their itching, and the vulva returned to a normal appearance in some cases. No histologic sec-

TABLE 1.—*Nonsurgical Therapy of Chronic Atrophy Dermatitis of the Vulva*

Present Age	Age at Menopause	Symptoms	Areas Involved	Previous Treatment	Comment
71	51	Severe itching, redness, swelling of vulva, 1½ years	Labia minora and majora, perineum, vulva	Local therapy	Prior treatment gave no relief; no clinical treatment
47	36	Itching of perineum, 5 years	Labia minora and majora, vulva	Irradiation and local therapy	Irradiation gave temporary relief
61	56	Itching of vulva, 8 or 10 years	Labia minora and majora, vulva	Irradiation and local therapy	Irradiation gave temporary relief; vulvectomy suggested
50	49	Itching of vagina, 17 years	Labia minora and majora, perineum, vulva, fissures extending into anal ring	Irradiation and local therapy	Marked relief for 7 months but symptoms have returned recently
40	..	Itching of labia, 5 or 6 years	Perineum extensively involved	Irradiation and local therapy	Irradiation gave relief for 1 month; aggravated symptoms returned; vulvectomy suggested
57	47	Severe itching of vagina and rectum, 10 years	Labia minora and majora, perineum, vulva	Local therapy	Medical therapy gave temporary relief; vulvectomy suggested
42	..	Itching of labia minora, 4 years	Edema of vulva, perineum	Irradiation and local therapy	Irradiation gave no relief; vulvectomy advised
53	..	Itching of vulva	Labia minora and majora, perineum, vulva	Local therapy	Treatment gave relief
50	..	Itching, burning of vulva, discharge, pain, 2 years	Labia minora and majora, perineum, vulva	Local therapy	No treatment given; vulvectomy suggested
60	35	Itching about anus, profuse discharge, 20 years	Labia minora and majora, anus	Local therapy	Roentgen and local treatment advised
60	53	Itching of vulva, pain, discharge, dysuria	Vulva, perineum	Estrogen	Improved on treatment; symptoms returned after 2 years
50	32	Itching, discharge, dysuria, 2 years	Labia minora and majora, preputial folds	Irradiation and local therapy	Irradiation made condition worse and was discontinued; vulvectomy suggested
40	..	Itching, discharge, dysuria, 1 year	Labia minora and majora, preputial folds, perineum	Estrogen	Treatment made condition worse; hypertrophic stage; no follow-up
19	..	Itching of perineum, 12 years	Labia minora, vulva	Local therapy	Patient improved after treatment; did not return to clinic

TABLE 2.—*Vulvectomy for Chronic Atrophic Dermatitis of the Vulva*

Present Age	Age at Menopause	Symptoms	Areas Involved	Previous Treatment	Date of Operation	Comment
62	47	Vulvar itching, burning, 2 months	Labia minora and majora, perineum, vulva	Irradiation and local therapy	March 1931	Irradiation gave no relief; results of vulvectomy excellent
56	46	Vulvar itching, burning, 3 months	Entire vulva, perineum	Irradiation and local therapy	July 1932	Some relief following irradiation; results of vulvectomy excellent
40	..	Vulvar itching, discharge, 9 years	Labia minora and majora, perineum, vulva	Irradiation and local therapy	Sept. 1933	Irradiation aggravated symptoms; results of vulvectomy excellent
59	49	Vulvar itching, burning after roentgen therapy for carcinoma of cervix	Labia minora and majora, perineum, vulva	Local therapy	April 1934	Good result; no complaints 5/17/38
48	47	Vulvar itching, 2 years	Labia minora and majora, perineum, vulva	Local therapy	April 1934	Treatment gave no relief; partial vulvectomy; no complaints 10/3/38
61	45	General itching, burning, 2 years	Labia minora and majora, perineum, anus	Irradiation and local therapy	May 1934	Good result; slight itching of anus still persisted 3/15/38
57	33	Vulvar and anal itching, burning, 10 years	Vulva, perineum	Irradiation and local therapy	June 1934	Good result; patient has not returned to clinic since 9/6/35
57	51	Genital itching, severe irritation	Marked inflammation and edema of vulva	Irradiation and estrogen	Sept. 1934	Irradiation given elsewhere; treatment gave no relief; operative result good
63	50	Vulvar itching, 15 years	Labia minora and majora, clitoris, perineum	None	Oct. 1934	Good result except for slight itching about anus
68	43	Vulvar itching, 1 year	Labia minora, clitoris, perineum	None	Nov. 1934	Excellent result
56	36	Vulvar itching, 4 months	Labia majora, perineum	None	March 1935	Excellent result
45	44	Vulvar itching, 2 years	Labia minora	None	June 1935	Excellent result
50	33	Vulvar itching, 14 months	Labia minora, clitoris, perineum	None	July 1936	Excellent result
50	48	Vulvar itching, 10 years	Labia minora, prepuce, clitoris, perineum	Estrogen	Nov. 1935	Good result; patient has not returned since 10/36
67	47	Burning, smarting, itching of vulva	Labia minora, clitoris, perineum	None	Dec. 1935	Excellent result
63	51	Itching of vagina, labia minora, anus, perineum, 10 years	Labia minora and majora	None	Dec. 1935	Good result; operation in two stages
51	51	Burning, itching of vagina, 5 months	Labia minora and majora, perineum	None	March 1936	Excellent result; no complaints
64	63	Vulvar itching, 6 months	Labia minora and majora, clitoris, perineum	None	Feb. 1938	Excellent result
47	47	Vulvar itching, dysuria, 4 years	Labia minora and majora, clitoris, perineum	None	Oct. 1938	Excellent result
					Feb. 1939	Good result

tions of the diseased skin were made. This simple therapy may be worth trying for patients whose predominant complaint is itching and whose skin is normal in appearance.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. VON HAAM AND DRS. ADAIR,
DAVIS AND SCHUITEMA

DR. FRED J. TAUSSIG, St. Louis: Dr. von Haam's analysis of the granulomas from a pathologic standpoint is important. I would stress his comment on the percentage of mixed infections. I have great difficulty in classifying these cases, particularly the group in which hypertrophy and ulceration have been pronounced. I believe that the important underlying etiologic factors in these cases are race, sexual habits and uncleanness. The paper by Drs. Adair, Davis and Schuitema brings out certain facts regarding the primary atrophy preceding the cases of leukoplakic change. This corresponded to my examination made in the city infirmaries of a large group of women who had no symptoms. Many cases similar to these occur without symptoms, but when the itching becomes persistent and pronounced one finds the typical leukoplakic change. In 50 per cent of our carcinomas of the vulva previous leukoplakic vulvitis had been present. I feel that in carcinoma of the vulva one can do fine work in preventive medicine by removing these leukoplakic vulvas. The cases in which carcinoma develops on such a leukoplakic basis are relatively benign compared to those in which a carcinoma develops from a papilloma or from a syphilitic ulcerative process. In the group developing from a leukoplakia it is found that if a radical operation is done, including the Bassett dissection bilaterally, going into the inguinal canal, the percentage of cures runs as high as 64 in our series. The importance, therefore, of not neglecting these cases, of not considering them hopeless even though the ulcerative process locally may be quite advanced, is great. I feel that one should operate in every case that is in any sense curable by surgery. Irradiation has proved in my hands, as it has at the University of Michigan, an absolute failure.

DR. EMIL NOVAK, Baltimore: In the paper of Drs. Adair, Davis and Schuitema reference is made to the fact that the ovarian estrogenic hormone exerts an influence on the vulva as well as on the genital tract. There is, however, no such cyclic change in the vulva as there is, for example, in the uterus, so that the vulva could scarcely be compared to the sexual skin of monkeys, in which such striking cyclic changes are noted. On the other hand, as Dr. Adair pointed out, the development and maintenance of the vulvar structures are under the direct control of the estrogenic ovarian hormone. The normal prototype of kraurosis is the moderate shrinkage and atrophy which normally takes place at the menopause. In some women, however, this atrophic shrinkage is so extreme in both vulva and vagina as to make coitus impossible, and on this purely kraurotic condition a leukoplakic vulvitis may be superimposed, probably as a result of secondary infectious processes. This, however, is not by any means the only sequence of events. I have seen extreme cases of chronic atrophic vulvitis with leukoplakia in women still in the reproductive epoch, with entirely normal menstruation. I saw such a condition in a patient of 28, whose trouble began at the age of 7. I mention this to emphasize that the influence of hormones in most of these cases is a very doubtful one, so that the generally unsatisfactory results of endocrine treatment need not be wondered at. Dr. von Haam's study of vulvar granulomas is valuable. His survey includes a number of lesions which ordinarily would be classified as ulcerations or chronic inflammation, in which granulation tissue is of course commonly present, though not in the circumscribed masses to which the term granuloma would ordinarily be limited. Such serologic, bacteriologic and biopsy studies as he has made have done much to clear up difficulties in the diagnosis of vulvar lesions. For example, the term esthiomene was formerly a dumping ground in the diagnosis of the ulcerative lesions, embracing all forms in which the etiology was obscure. Now it seems justifiable to limit the

term, as Dr. von Haam has done, to the ulcerative lesion which may form such a troublesome feature of advanced lymphopathia venereum.

DR. E. D. PLASS, Iowa City: I desire to complement the exposition of vulvar lesions by showing illustrations from my own experience. The first patient, 18 years old, a primigravida, complained of a painful tumor of the left labium. The mass was first noted at the age of 8 and had gradually increased in size. The home physician had drained the cyst but an abscess developed. This abscess was drained and subsequently the cyst was removed. It proved to be an epithelial inclusion cyst. The second patient, 17 years old, was a primigravida at term who complained of edematous swelling of the vulva for four days prior to admission. On admission the blood pressure was 150 systolic, 100 diastolic. There was marked edema of the legs and thighs. The patient was unable to void, and catheterization was effected with difficulty. The day after admission the patient started into labor and was delivered by low cervical cesarean section. Twelve days later there was no evidence of the edema. The next patient, a 24 year old quintigravida, developed bilateral masses on the labia minora three or four days after delivery. The history revealed that after the previous deliveries there had been similar painful swellings of the labia which had regressed within a few days, suggesting accessory breast tissue. The tumors were removed and showed breast tissue. After operation the vulva returned practically to normal. The next patient, a 54 year old multipara, complained of a painless tumor on the left vulva of six years' duration. This tumor was excised under local anesthesia and proved to be a lipoma. A 34 year old septigravida, and eight lunar months pregnant, complained of a mass involving the vulva. This mass had developed following a fall during which she hit the vulva on a chair. An obvious diagnosis of hematoma of the vulva was made. The hematoma was incised, the contents were evacuated and the bleeding points were ligated. On the following day she delivered spontaneously premature stillborn twins. The convalescence was uneventful. A 39 year old multigravida was admitted for treatment of a large fibroid of the uterus. A small cyst was detected in the left labium minus and was removed completely. It was a cystadenoma of the sweat glands.

DR. RITA S. FINKLER, Newark, N. J.: In simple senile vulvovaginitis not complicated by extensive leukoplakia or kraurosis vulvae, good results have been obtained by the use of estrogenic therapy. Since the publication of Dr. Davis's work on the beneficial results obtained with the use of estrogenic therapy in senile vulvovaginitis I have treated fifty-one patients presenting symptoms of senile vulvovaginitis in the last two years. Dr. Davis used estrogens chiefly by the intramuscular route and not only did all the patients respond with relief from the symptoms complained of, but a restoration of the vaginal epithelium from a senile type to the type present during active sex life was noted. In my patients especial emphasis has been laid on inunction and oral therapy. Of fifty-one patients, twenty-one were treated by estrogenic inunctions into the affected area, sixteen by concentrated estrogenic preparations administered orally, ten by intramuscular injections and four by the use of estrogenic vaginal suppositories. All patients were studied by means of vaginal smears and vaginal biopsies. Multiple vaginal biopsies were taken before, during and after the completion of the therapy. Biopsies were also taken during the periods of control therapy, which consisted of placebo tablets and bland and analgesic ointments. In most of the cases the oral and inunction therapy compared favorably with the method of intramuscular injections, provided a sufficient concentration of estrogens was used. The estrogenic ointment (estradiol-progynon D-H ointment) was applied locally to the affected area; the oral preparations consisted of estradiol 1,500 oral units daily, emmenin (estriol glucuronide) from 4,000 to 6,000 oral units daily, and stilbestrol given in capsules, 1 mg. doses three times a day (about 7,500 units daily). There is evidence of systemic absorption from the use of estrogenic ointment; this was apparent in one of the cases in which an episode of uterine bleeding occurred ten years after the menopause. During the administration of oral preparations there was a marked relief from menopausal symptoms besides the

improvement in the senile vulvovaginitis. On the whole, estrogenic therapy administered either by inunction, by the oral route or by intramuscular injection has its place in the treatment of selected cases of senile vulvovaginitis.

DR. FRED L. ADAIR, Chicago: I think that no controversial points of importance have been raised in connection with the discussion, so I will devote the few moments I have to treatment of these atrophic conditions. I think, in general, that when no symptoms arise from these atrophic conditions little if any treatment is needed. Many of the symptoms are due to complicating or secondary conditions, such as pyogenic infections, diabetes, irritating vaginal discharges or mycotic infections, and every effort should be made to clear up the secondary complicating conditions before attempting any more radical procedures. In our hands, at least, any attempt at anything other has met with little success. Various things have been tried by us in the way of local applications, lotions and so on, radiation therapy, and to a certain extent endocrine therapy. There are reports in the literature in which estrogenic substances in particular have been administered hypodermically, orally and locally. While some alleviations of symptoms has been obtained by certain of these methods, I think it is fair to say that no permanent cure or arrest of the condition has been accomplished by them. That does not mean that we should not attempt to continue the use of these and to try to find out something that might be efficacious. However, I think that at present the only treatment which we really have is the treatment of the secondary conditions and surgery with vulvectomy, which is indicated from two points of view: first alleviation of the symptoms and second the prevention of chronic irritation, which may lead to a subsequent malignant condition. We can regard the vulvectomy not only as an alleviative measure, at least arresting the condition, but also as a prophylactic measure for the possible development of carcinoma.

CARE OF TRAUMATIC INJURIES OF THE MALE URETHRA

WILLIAM R. HORNADAY, M.D.

DES MOINES, IOWA

When all etiologic factors are considered, urethral injuries in the male occur not infrequently. In the evolution of man to the two-footed and upright position, he has acquired an increased hazard to certain accidental injuries. Among these are injuries to the lower part of the abdomen, the pelvis and the lower extremities. Experiences recorded by observers in all parts of the world reveal a wide diversity of means by which accidental injuries to the urethra may be acquired. By far the most frequent cause is a fall from an elevated position in which the entire body weight is transmitted with a sudden impact to a localized point of the perineum. Perhaps the second most common cause involves crushing injuries in which the body is caught or impinged beneath a falling object. Injuries incurred in the latter type of accident are invariably complicated by fractures of the pelvic girdle. In my experience such injuries often occur in automobile accidents and in mine casualties in which the miner is pinned under a fall of coal. There is a noticeable geographic as well as an occupational element noted in the origin of many urethral injuries. According to Peacock and Hain,¹ the lumberman of the Northwest is a frequent victim. Such injuries are also prevalent among the boatmen of China, as noted by Crawford.² O'Connor³ reported frequent instances of injuries

incurred from falling through a partly opened manhole in the more densely populated areas of our larger cities. In time of war, wounds from shrapnel and bullets, as well as bayonet deflections, are important factors in urethral injuries.

During the past quarter of a century, since Nitze's development of the cystoscope, a widely increased practice of urethral instrumentation has developed and, by gradual stages, become the high art it now is, as exemplified in various forms of transurethral surgery. Undoubtedly, the tolerance of the urethral orifice should rank high in comparison with that of other apertures of the body when the frequency of the introduction of tools from the exterior is considered. This ability of the urethral canal with its complex system of glandular network to withstand instrumentation in the absence of a disease process and manifest little or no after-effect is a source for wonder. The reverse is equally true, and often there is a violent reaction when slight instrumental injury is incurred in the presence of acute or chronic inflammatory disease, especially when it is associated with partial obstruction to the urinary flow. An illustration of this fact was recently observed:

A man aged 21 reported to his family physician on account of difficulty in emptying the bladder. He gave a history of long-standing pyuria and denied having had a syphilitic infection. Examination revealed a pinpoint opening of the meatus with multiple strictures of the penile urethra. A meatotomy was performed. In repeated attempts to dilate the urethral scar a small puncture wound was incurred in the urethral wall about 10 cm. back of the external opening. The accident was recognized at the time, and drainage by the use of a small indwelling catheter was established for two days. Shortly after its removal, localized edema was noted. Several attempts at catheterization met with failure. Progressive ecchymosis ensued rather promptly, with discoloration of the entire penile structure and subsequent extension to the tissues of the scrotum, following closely the line of Colles' fascia, upward and over the lower pubic area of the abdominal wall. In order to halt the process and reestablish functional drainage, suprapubic cystostomy was performed. Numerous incisions were necessary to drain the tissues of extravasated fluid. The patient is now in the midst of severe septicemia, with the outcome shadowed in doubt.

It is a rather common experience, when foreign bodies lodge in the urethral canal, to encounter difficulty in their removal by way of the anterior urethra. The question should always be uppermost: Will less scar tissue result from an external urethrotomy to remove the foreign body than from persistent efforts to extract it by urethral instrumentation? The same query is raised when an abnormally small urethral canal (under 24 French, generally regarded as of normal size) is called on to receive tools of larger caliber (from 26 to 30 French), such as are now employed in various forms of transurethral surgery. Examples are the resectoscope and the modern lithotrite, provided with constant vision. Because of the tension placed on the urethral canal under such circumstances, either perineal section or suprapubic cystostomy should be favorably considered. On reflection, a number of instances may be recalled in which either the suprapubic or the perineal route would have been preferable.

URETHRAL INJURY OF EXTERNAL ORIGIN

In making a detailed study of fourteen selected cases during the past five years, the resulting experiences have, in the main, corroborated others of preceding record. It is recognized that this number is not large, but it is sufficient to afford added information and possibly to extend our knowledge a little with respect to future management of this type of accidental dis-

Read before the Section on Urology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Peacock, A. N., and Hain, R. T.: *Injuries of the Urethra and Bladder*, J. Urol. 15: 563-582 (June) 1926.

2. Crawford, E. R.: *Care of Cases of Traumatic Rupture of Male Urethra*, Virginia M. Monthly 59: 670-672 (Feb.) 1933.

3. O'Connor, V. J.: *Repair of Rupture of the Male Urethra*, Surg., Gynec. & Obst. 63: 198-200 (Aug.) 1936.

ability. In this series I have noted a large number of incomplete tears of the anterior urethra as compared with the more serious rupture of that portion of the urethral canal posterior to the triangular ligament. Injuries of the urethral canal above this important anatomic landmark of the perineum are invariably in the nature of complete division of segments, which often are not in apposition. Usually the urethral lesion is acquired by multiple fractures of the bony pelvis with displacement. Associated with this there is frequently a tear of the bladder wall with resultant extravasation.

It should be emphasized that the accidentally acquired lesion of the lower part of the urinary tract may be but a part of a general picture involving vital injuries of the intestine or other important viscera, and attention

ligament, are involved by leakage due to incomplete rupture at this point of the urethra.

A tabulated list of signs or symptoms may not apply to any particular patient. As emphasized by Young⁴ and others, if a patient is seen soon after an accident, superficial symptoms of minor character may mask a more severe lesion, deeply placed, which will soon be manifest by evidence of approaching shock. An example of this was seen in case 6. After an automobile accident, the patient suffered a complete tear of the posterior urethra and a large rupture in the bladder wall with intraperitoneal extravasation. For personal reasons this patient desired to be transferred from one hospital to another, and this was accomplished before complete physical collapse ensued about two and one-half hours after the accident.

Survey of Clinical Material

Case	Nature of Accident	Type of Injury	Catheterization	Meatal Hemorrhage	Infection (Prior)	Urinary Retention	Shock	Care
1	Blow from upturned rake in field	Incomplete rupture membranous urethra	No	Profuse	No	Yes	No	Perineal section
2	Automobile	Pelvic fracture, complete rupture posterior urethra	No	Slight	No	Extravasation, extraperitoneal	Yes	Suprapubic cystostomy
3	Fall from saddle	Pelvic fracture, complete rupture posterior urethra	No	Slight	No	Extravasation, prevesical space	Profound	Suprapubic, later urethral
4	Fall astride baggage	Bulbomembranous urethra	No	Profuse	No	Yes	Slight	Fillform catheter technique
5	Pinned under falling ledge of coal	Pelvic fracture posterior urethra, intact bladder	No	Moderate	No	Yes	Moderate	Suprapubic cystostomy
6	Automobile	Pelvic fracture posterior urethra	No	Moderate	No	Extravasation, intraperitoneal and extraperitoneal	Profound	Suprapubic, later urethral
7	Fall on rung of ladder	Membranous urethra	No	Profuse	No	Yes	No	Suprapubic cystostomy, secondary infection
8	Fall down grain elevator shaft	Membranous urethra	Yes	Profuse	Yes	Yes	No	Perineal section, catheter over fillform
9	Fall over chair	Bulbomembranous urethra	Yes	Slight	No	No	No	Normal drainage
10	Pinned back of automobile	Pelvic fracture, bladder rupture posterior urethra	No	Slight	No	Extravasation, prevesical and retrovesical space	Severe	Suprapubic cystostomy
11	Straddle fall on sideboard of wagon	Bulbomembranous urethra	No	Profuse	No	Yes	No	Perineal section, urethral catheter only
12	Caught between side of building and truck	Pelvic fracture	No	Moderate	No	Yes	Moderate	Early perineal section
13	Instrumentation	Penile urethra	Yes	Moderate	Yes	Yes	No	Suprapubic cystostomy, multiple drainage technique
14	Fall astride loose manhole cover	Membranous urethra	No	Moderate	No	Yes	No	Perineal section, urethral catheter

to these structures is of equal importance. Thus the friendly and cooperative hand of the abdominal surgeon is always appreciated.

I have found that it is exceedingly difficult to classify urethral injuries into definite groups, although in a general way one should recognize the site of the injury as being either anterior or posterior to the superior or deep layer of the urogenital diaphragm. Suggestive signs elicited by external superficial examination, together with knowledge of the accident and associated details, will usually provide a positive clue as to whether the rupture is complete or incomplete. Within a few hours, and often much earlier, evidence of fluid extravasation may become apparent. This may be manifest in the lower part of the abdomen and pubic area, or rectal examination may reveal escaping fluid above the level of the superior layer of the triangular ligament and in the retrovesical space. Again, visible evidence may be found in discolored swelling of the external surface of the perineum when the ischioanal fossae, situated posteriorly to the two layers of the triangular

The influence of the fascial planes in the presence of injury is of importance provided the fascial sheath itself is not involved in the lesion, thus interfering with the property of tissue localization. A bullet or stab wound may produce an injury of the urethra similar to the so-called straddle blow on the perineum, yet the flow of the extravasated fluid may be in an opposite direction. Urethral hemorrhage plus urinary retention may be present in some instances in addition to other signs of the injury. It is obvious that the fascial planes offer little or no effect on tissue drainage in patients who have multiple or comminuted fractures with displacement of the bones of the pelvis. In two of four patients having fractures of the pelvis there were numerous rents in the bladder wall as well as a complete rupture of the prostatomembranous urethra. Under such circumstances, the fluid of extravasation is found within the dependent portion of the abdominal cavity with the resulting clinical picture of peritoneal invasion.

4. Young, H. H.: Treatment of Complete Rupture of Posterior Urethra, Recent or Ancient, by Anastomosis, *J. Urol.* 21: 417 (April) 1923.

Some degree of confusion persists with respect to the fascial structures of the pelvis and the perineum and the role played by the different fasciae in the presence of escaping fluid from the urinary tract. This was well explained by Wesson⁵ in an excellent treatise in 1923. There is a lack of unanimity of view between the anatomist and the surgeon with respect to anatomic terms, particularly with reference to Denonvilliers' fascia and the double layer of the urogenital diaphragm. There is also some complexity of relationship between Buck's and Colles' fasciae, both of which were originally recognized by surgeons. Tissue behavior in the presence of cellular activity, as witnessed on the operating table, is dissimilar to that viewed in the dissecting room. Then, too, there seems to be some disagreement among surgeons themselves concerning the interpretation of clinical facts as presented in cases of urethral injuries with subsequent extravasation. This applies to the presence of hematomas and the accumulation of urine in the subcutaneous tissues external to the bladder and urethra and their restrictions by the presence of the various fascial planes.

MEASURES IN TREATMENT

The first prerequisite in the care of accidental injuries of the urethra is to determine the manner in which the injury was received. Early and accurate interpretation of the location of the injury is absolutely essential. The general physical status, the amount and degree of hemorrhage, trauma of other important viscera which react on the general physical state of the patient and the varying degrees of shock form the clinical picture which, in its entirety, governs the measures in preliminary care.

X-ray studies are invaluable and should be utilized when at all available. Even when fractures seem improbable, the return to normal position of displaced fragments of an unsuspected fracture, or a spicule of bone, offers valuable information concerning the location of the urethral tear. The cystogram is of doubtful value and, if pursued by the retrograde route, invariably affords an increased element of hazard. It is obvious that in all cases of urethral injury, even though the injury may appear to be rather inconsequential, the patient should be hospitalized whenever circumstances permit him to be moved. Close and constant observation of this type of injury will, at times, aid in the detection of early and slowly developing pockets of extravasation.

The use of the indwelling urethral catheter should be attempted only after it has been determined that the rupture is not complete and is distal to the deep layer of the urogenital diaphragm. In most other situations, the use of the urethral catheter should be discouraged, as the danger is increased manyfold by unwise attempts to relieve urinary retention by this method. There is additional danger in its coincident employment with the irrigating urethral syringe. It frequently happens that the catheter fails to drain, and, in order to test the patency of the catheter, fluid is injected with the hope that it will reach an intact bladder and then promptly return. The patient complains of pain in one of the ischio-rectal fossae or increased distress in the lower part of the abdomen, the result of increasing extravasation. In addition there is the danger of superimposed infection.

When it has been obviously demonstrated by the clinical picture that drainage by urethral catheter is

indicated, one may proceed, under strictly aseptic precautions, to employ the modified flexible filiform. When handled carefully, the filiform will often pass successfully through the urethra by the traumatized area and into the bladder. The filiform, with the detachable catheter, is then partially withdrawn, and a soft rubber catheter (from 16 to 18 French) is passed and adjusted over the filiform, which is still in place. The catheter is then slid over the filiform and into the bladder. The filiform is removed and the catheter anchored in position for continuous drainage over a period of from ten to twelve days. I prefer the use of catheters of smaller size (from 16 to 20 French) to those of larger size (from 22 to 26 French), as was my former custom, because of the danger of rolling back the proximal fragment of the severed urethra with resultant displacement of the ends, which interferes greatly with this maneuver. In addition, the smaller catheter facilitates free drainage between the surface of the catheter and the urethral mucosa and makes the patient more comfortable. It should be stressed that the successful employment of the filiform catheter depends on the avoidance of preliminary attempts to use sounds or other forms of instrumentation which augment the existing tissue trauma.

SUPRAPUBIC CYSTOSTOMY

Whenever there is an element of doubt concerning the procedure to be employed, especially in instances in which the urethral injury is demonstrated as a major one, suprapubic drainage should be the method of choice. Kidd⁶ contended that if this is done care of the urethra may be disregarded. My experience coincides with this view to the point at which reparative measures in healing have taken place. Frequently I have faced the necessity of reopening the urethral canal because of the formation of scar tissue. This can usually be well controlled by the employment of sounds for dilation, together with the use of the indwelling catheter. The suprapubic approach not only allows free and complete drainage of the bladder but permits inspection of the adjacent peritoneum and of the bladder wall and search for possible evidence of upward encroachment of extravasation into the prevesical space. Then, too, the urethral canal may be allowed to remain at rest if a small catheter for splint purposes is not indicated. As recommended by Martin⁷ and described by Ockerblad,⁸ combination of urethral and perineal section is to be employed when pockets of extravasation are found anterior to the rectum and in the ischio-rectal fossae.

PERINEAL SECTION

Theoretically, drainage by perineal section should prove ideal; in the Orient it is practiced almost entirely to the exclusion of other forms of drainage. In my experience, results have not been so favorable because of the variety of complications which have arisen owing to necrosis, secondary infection, resultant scar tissue and persistent sinus formation. If all details attendant on this form of drainage are strictly adhered to, this type of operative repair and drainage will prove superior in the absence of infection in patients with a heavy perineal floor. At the same time, an immediate opportunity for plastic repair of the severed urethra can be attained.

6. Kidd, cited by Moore, H.: Traumatic Rupture of Urethra and Its Treatment, *M. J. Australia* 1: 657-661 (April 9) 1938.

7. Martin, H. W.: Injuries of the Posterior Urethra, *J. Urol.* 34: 718-726 (Dec.) 1935.

8. Ockerblad, N. F.: Personal communication to the author.

5. Wesson, M. B.: Fasciae of Urogenital Triangle, *J. A. M. A.* 81: 2924-2930 (Dec. 15) 1923.

In addition to the hazard of acquired secondary infection from a surface contact, there are other factors to be considered. Patients with thin perineal floors do not possess the ability for prompt tissue repair. It is my impression that, if perineal section is employed, it should be done in all cases in which obvious perineal drainage is indicated and care should be exercised concerning the caliber of urethral drainage in order to avoid urethral distention with its tendency to tissue necrosis in the presence of nearby drainage.

Staphylococcal and proteus infections are still frequent invaders in all types of operative procedures on the bladder and urethral canal. Even with the addition of chemotherapy to medical equipment during the last decade, there is still the problem of infection to combat. Sulfanilamide and its by-products, as well as mandelic acid, are not well adapted to immediate postoperative medication. In the presence of severe urethral injuries, in addition to the operative measures of correction, the general body resistance is at a low level. Main reliance must then be placed on forced fluid intake and the use of local antiseptics.

REPORT OF CASES

I wish to review briefly three selected cases:

CASE 1.—L. E. C., a railway baggage man aged 41, was admitted to the Perry Hospital April 1, 1934, three hours after he had fallen astride a piece of baggage while attempting to descend from a pile of boxes. He experienced severe pain in the scrotum and the body surface in front of the rectum. During the interval immediately following the accident he was able to void a small amount of urine mixed with blood. He continued his duties, however, and finished the run of 50 miles. Later he passed a large quantity of blood. He then consulted his family physician, Dr. George Elvidge, who promptly ordered him to the hospital. Complete inability to empty the bladder ensued, and after twenty-four hours he complained of severe distress in the lower part of the abdomen from apparent distention of the bladder. Examination thirty-six hours after the accident revealed slight evidence of shock, marked distention of the lower part of the abdomen and signs of recent urethral hemorrhage. Results of rectal examination were negative, and a slight amount of discolored swelling was apparent in the scrotum and the perineum. No evidence of extravasation was noted. Before open surgical therapy was resorted to and under aseptic precautions a flexible urethral filiform was introduced and was found to pass easily through the urethra, thereby relieving the retention. The catheter with the filiform was partly removed, and a soft rubber catheter (18 French) with open tip was introduced in sleeve fashion over the filiform, which remained in place as a guide. The catheter slipped easily into the bladder and was anchored in position for ten days. The patient continued to recover without incident, and since he has been symptom free he has not reported for follow-up attention such as urethral dilation, which was advised. In passing, it might be well to stress the fact that there was no urethral instrumentation preliminary to the employment of the filiform catheter.

CASE 2.—A. I. E., a farmer aged 58, was admitted to the Lutheran Hospital Nov. 22, 1935. About four hours before hospital entry, while working on an upper floor of a grain elevator, he slipped and fell through a ladder shaft, a distance of 8 feet, landing astride a lower rung of the ladder. He experienced severe pain and distress in the perineum, where the full impact of the fall was received. In a short time a large amount of blood had trickled from the external urethral opening, and soon afterward discolored swelling was noticeable in the scrotum and perineum. After a local examination by his family physician, Dr. J. A. Snyder, he was referred to the hospital. The patient was small, sparsely built and poorly nourished and on examination was in evident distress from the effects of the perineal injury and inability to void. His

temperature was 100.4 F. and the pulse rate 94. There was slight evidence of shock. Rectal examination gave negative results except for moderate distention of the bladder. Urethral catheterization was employed successfully as in case 1, and normal drainage was continued. With the patient in the lithotomy position, multiple incisions were made with perineal section to provide drainage of the left ischioanal fossa, where a small amount of extravasated fluid had accumulated; after the initial application of 5 per cent acetic acid, hot moist packs were used and later infra-red therapy. The postoperative picture was marred because of a moderate degree of localized sepsis and tissue necrosis which involved the perineal floor. This necessitated persistent drainage through the urethral canal and to some extent of the perineal sinus. Complete healing was established in about six weeks. His further convalescence was disturbed by a stricture and partial urinary retention, which was not adequately controlled by urethral dilation. Because of his age, his poor general condition and the fact that there was evidence of marked dental sepsis, it is my impression that perhaps suprapubic drainage would have been preferable in this case.

CASE 3.—T. L., a school boy aged 17, was admitted to the Methodist Hospital Christmas Eve of 1934 after an automobile accident. Preliminary physical examination revealed marked abdominal distention with distinct evidence of urethral hemorrhage. His temperature was 97 F. and the pulse rate 130. There were a noticeable pallor and other visible signs of profound shock. A roentgenogram of the pelvis taken with a portable x-ray machine showed extensive and numerous fractures of the pelvic bones with displacement of many fragments. Since almost three hours had elapsed since the accident and the patient had been moved about considerably in being transferred from one hospital to another, emergency measures for the treatment of shock were promptly instituted. This included the use of acacia in saline solution, which undoubtedly was instrumental in saving his life. At suprapubic cystostomy, the abdominal cavity was found to be filled with a large amount of bloody extravasated fluid, obviously from a double rent in the bladder wall and a cut across the prostatic urethra, together with active bleeding from numerous blood vessels of many of the pelvic structures. Tube drainage was instituted in the bladder and prevesical space, and gauze packs and tubes were introduced into the intraperitoneal space of the pelvis. Convalescence proved slow at first, but gradual progress was maintained. Considerable difficulty was encountered in reestablishing normal urethral drainage because of scar tissue and resultant stricture of the prostatic urethra. The presence of urea-splitting organisms proved troublesome owing to the tendency toward the formation of phosphatic stones, which necessitated a second suprapubic incision three months later for the removal of a vesical calculus weighing 12 Gm. A small calculus had previously been extracted by way of the urethra. The patient recovered in a manner sufficient to enable him again to participate actively in competitive athletics, and he served as captain of his baseball team. He last reported feeling well and stated that he had only slight physical impairment.

SUMMARY

1. Urethral injuries are incurred through a wide diversity of accidental traumas.
2. The external clinical picture affords a fairly accurate clue as to the nature and degree of the existing urethral injury.
3. Little or no systemic reaction is anticipated from injury of the anterior urethra in the absence of extravasation. Shock of variable degree is associated with trauma of the posterior urethra.
4. Urethral injury of instrumental origin assumes a role of increasing clinical importance.
5. Early and accurate interpretation influences the type of operative procedure to be employed.

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ABSTRACT OF DISCUSSION

DR. A. J. SCHOLL, Los Angeles: Rupture occurs most commonly in the bulb and in the membranous urethra. Practically all straddle injuries occur in the bulb as a result of driving that part of the urethra against the cleft of the pubic arch, a small percentage occurring in the membranous urethra. Most instrumental injuries occur in the bulb. Injuries to the pendulous portion of the urethra are usually the result of direct violence. Several ruptures have resulted from too vigorous and enthusiastic coitus, and one case was reported in which the penis was caught in a whirling machine. Dr. Hornaday noted that the lumbermen in the Northwest are frequent victims, as are the boatmen in China. Different cities seem to have different types of injuries. O'Connor reported eight cases of rupture of the bulbous urethra as a result of stepping on a manhole cover. In New York injuries to the pendulous urethra are fairly common. Most injuries posterior to the triangular ligament consist of laceration by spicules of bone and are commonly seen in association with crushing injuries of the pelvis. Occasionally a complete shearing off of the urethra from the base of the prostate occurs. Dr. Hornaday urges caution in the use of the catheter. I agree that unwise or vigorous catheterization should not be done, but in most cases some attempt at passing a catheter is made. With most ruptures, except those of slight extent, the passage of a catheter as far as the bladder is impossible. In a few cases the accurate, gentle passage of a catheter is all that is necessary to make the diagnosis, and leaving it in is sufficient treatment. In some cases the information obtained may be misleading. If the rupture is above the triangular ligament, the catheter enters the perivesical space and the drainage of pure blood suggests bladder rupture. The fact that the catheter passes in so far and so readily lends a false sense of security to the procedure. The flow of blood and lack of urine quickly dispel any hope that the urethra is intact. I agree with Dr. Hornaday; when in doubt do a suprapubic drainage. This should be done if a catheter cannot be passed or if there is suprapubic or perivesical extravasation. I believe in free and early incision in areas of extravasation and early bladder drainage when indicated. A suprapubic drainage diverts the urinary stream; it permits exploration of the bladder for associated injuries, and it is a good approach to the urethral lesion. The suprapubic wound does not cause a much longer stay in the hospital; diverting the urinary stream permits the perineal wound to heal more rapidly with less infection and less scarring. Since reading Dr. O'Connor's paper on urethral injuries and his description of the Smith interlocking sounds, I have not found it necessary to open the perineum, except in case of extensive injury.

DR. E. L. MERRITT, Fall River, Mass.: In our community we see men aboard ships who fall down through hatchways and on various objects on vessels. We see rupture of the urethra ranging all the way from minor injuries to complete destruction of the urethra in the perineum. Recently two patients came under my care, one falling astraddle a cesspool cover and the other falling on the tailboard of a truck, whose entire urethras were completely destroyed in the perineum. In such cases suprapubic drainage with the establishment of through and through drainage, that is, doing suprapubic cystotomy, opening up and exploring the bladder and bringing a rubber tube down through the urethra and out through the external meatus with windows in the midportion which will be kept in the bladder, works out very nicely. Later the upper part of the tube can be cut and removed, the suprapubic wound being allowed to heal and then the urethra being allowed to heal around this tube. One thing that has not been brought out emphatically enough is the necessity for continued dilation of these urethras for years afterward. That is very necessary, and it is necessary to bring that out to the insurance companies in compensation cases when they can't understand why the condition does not completely clear up in several months. Another point I wish to emphasize is damage to the urethra from instrumentation. Many of us believe that the old strictures we used to see in cases of gonorrhea years ago were largely produced from trying to force No. 28 sounds into

No. 18 urethras, great destruction of the mucous membrane being caused in this way rather than by the gonorrheal infection itself. So today with cystoscopic examination of children I am convinced that we are producing some damage to the urethras of young boys. During the last two years, in several cases which have come under my care, I have believed very strongly that traumatic strictures have been produced in the urethras of these youngsters by cystoscopic examination. I think that for very young boys it is better to use intravenous urography in studying the kidneys than to do a cystoscopic study unless absolutely necessary.

DR. WILLIAM R. HORNADAY, Des Moines, Iowa: There are two points I would like to emphasize. In my experience patients who had urethral and bladder injuries, in whom drainage tubes and catheters were placed, pursued a rather smooth convalescence and at the same time some of them showed rather heavy pyuria. Because of the heavy purulent drainage there was a temptation to employ external or syringe irrigations. However, I have found that a violent upset frequently occurs when this is done. The clinical picture is entirely changed many times and a stormy course then ensues. The second point refers to follow-up care of these patients. I agree that it is a good plan to advise routine dilations. Difficulty is often encountered in getting patients to carry out these instructions; however, as a matter of personal protection it is wise to make this advice a part of the permanent record.

NICOTINIC ACID DEFICIENCY
ENCEPHALOPATHY

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We are reporting 150 cases of an "encephalopathic syndrome," a condition heretofore almost always fatal, which we believe is caused by nicotinic acid deficiency. This syndrome may occur as the only clinical manifestation of a deficiency disease or it may occur in association with pellagra, polyneuritis due to vitamin B₁ deficiency, the oculomotor disturbances of a "central neuritis" or scurvy. The clinical picture of this encephalopathic syndrome is more or less well defined and is characterized by clouding of consciousness, cogwheel rigidities of the extremities and uncontrollable grasping and sucking reflexes.

Bender and Schilder,¹ who have described its clinical picture, included this syndrome as one of a group of five which they called collectively "encephalopathia alcoholica." Their classification of the types of encephalopathia alcoholica was related to the most prominent manifestations: (1) clouding of consciousness and changing rigidities, (2) cerebellar symptoms, (3) catatonias, (4) alcoholic delirium and (5) polyneuritis. Groups 1 and 5 were clinically similar, the difference being that in group 1 the polyneuritis was minimal or absent while in group 5 the polyneuritis was so marked as to constitute the most prominent manifestation. We believe that these two groups are identical, differing only in the degree of clinical vitamin B₁ deficiency superimposed on a nicotinic acid deficiency or vice

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1. Bender, Lauretta, and Schilder, Paul: Encephalopathia Alcoholica, Arch. Neurol. & Psychiat. 29: 990 (May) 1930.

versa. Groups 2, 3 and 4 present different clinical pictures distinct from the specific encephalopathic syndrome reported herein. We also believe that the oculomotor disturbances when they occur are a manifestation of a disease process distinct from this specific encephalopathic syndrome. Likewise to be excluded are the encephalopathic manifestations of groping, grasping and sucking which may occur during the course of delirium tremens, acute alcoholic hallucinosis, expanding intracranial lesions, infectious diseases with delirium, advanced cerebral arteriosclerosis and other diseases.

The encephalopathic syndrome does not occur exclusively in alcoholic patients. Both Spies² and Sydenstricker³ have observed this syndrome in endemic pellagrins. Some of the cases of pellagra described in the recent report of Matthews⁴ (cases 2 and 9) may very well have manifested this encephalopathic syndrome, although his report does not include recorded observations of grasping and sucking reflexes or of cogwheel rigidities of the extremities. Cleckley, Syden-

Relation of Therapy on 150 Subjects Having the Encephalopathic Syndrome

Treatment	Cases	Deaths		Died Corrected From Other Causes	Mortality, per Cent
		Num-ber	Per Cent		
House diet, dextrose and saline solution.....	47	45	95.7	3	89.4
House diet, dextrose and saline solution, thiamin chloride.....	15	15	100.0	0	100.0
Vitamin rich diet, dextrose and saline solution, vitamin B complex.....	66	41	62.2	7	51.5
Basal diet, dextrose and saline solution, nicotinic acid.....	22	7	31.8	4	18.6

stricker and Geeslin⁵ have studied a group of subjects having stupor which responded to nicotinic acid therapy. We believe that several of their protocols are probably descriptions of the encephalopathic syndrome which we are reporting here.

Prior to 1933, patients admitted to our service having this encephalopathic syndrome almost invariably died irrespective of the treatment given. Since most of the patients were dehydrated, it seemed reasonable to attempt hydration by infusions of 5 per cent dextrose in physiologic solution of sodium chloride. A total of forty-seven patients were thus treated (shown in the table), forty-five of whom died while exhibiting the encephalopathic syndrome. Three of these patients had other diseases which were probably fatal (pneumococcic pneumonia, ruptured duodenal ulcer, subarachnoid hemorrhage); if these are discarded a corrected mortality of 89.4 per cent is obtained.

Most of these subjects had polyneuritis due to vitamin B₁ deficiency. A considerable number had stomatitis, which in fifteen instances is now recognized as having been similar to the stomatitis of patients with pellagra. Its frequent association with known deficiency diseases suggested that the encephalopathic syndrome too might be a manifestation of some nutritional lack. If so, then from its commonest associations the deficiency would most likely be of one or more frac-

tions of the vitamin B complex. That the encephalopathic syndrome also occurred independently, in the absence of other clinical evidence of deficiency disease, suggested the possible lack of a distinct and perhaps as yet unidentified nutritional element. Since polyneuritis was the commonest associated disease, we studied the effect of parenteral administration of from 50 to 200 mg. of thiamin chloride daily while continuing the routine treatment of hydration. The fifteen consecutive patients thus treated all died without improvement in the encephalopathic syndrome. The next group of these patients was treated with vitamin rich diets supplemented by oral and parenteral administration of large amounts of preparations rich in the B vitamins: vegex, brewers' yeast, an aqueous whole liver extract and various fractions of liver. Of the total of sixty-six patients thus treated thirty-three had other signs now recognized as due to deficiency of nicotinic acid. Twenty-five, or 37.8 per cent, of these patients recovered; the rest died while manifesting the encephalopathic syndrome, a mortality of 62.2 per cent. Seven patients in this group, however, had in addition a probably fatal disease (three advanced pulmonary tuberculosis, two pneumococcic pneumonia, one Streptococcus haemolyticus sepsis, one cirrhosis of the liver); discarding these, we obtain a corrected mortality of 51.5 per cent. This experience supported our hypothesis that the responsible factor or factors must be sought in the vitamin B complex, excluding thiamin chloride.

Shortly after nicotinic acid had been announced by Elvehjem and his associates⁶ as the specific cure for blacktongue in dogs and by Spies and his associates⁷ and others⁸ for pellagra in man, and after verifying the efficacy of nicotinic acid in a series of our pellagrins (reported by Spies⁷), we began to test the effect of nicotinic acid on our patients having the encephalopathic syndrome.

METHOD OF STUDY

On their admission all the subjects were given 180 cc. an hour of 5 per cent dextrose in physiologic solution of sodium chloride by mouth, usually by nasal catheter. If able to eat, they were given a basal diet extremely low in the entire vitamin B complex. The first sixteen patients were thus maintained for a control period of three days before nicotinic acid was given. The remaining patients were given nicotinic acid as soon as the diagnosis of the resident staff was confirmed by one of us. In the beginning of the study we gave to each patient 500 mg. of nicotinic acid a day, divided into five equal doses and administered at hourly intervals by mouth in the solution of dextrose in physiologic solution of sodium chloride; later this was increased to 1,000 mg. a day in ten hourly doses administered by the same method; finally, on the advice of Sydenstricker we added to this therapy 100 mg. daily of sodium nicotinate, diluted in 5 per cent dextrose in physiologic solution of sodium chloride administered intravenously and 100 mg. of sodium nicotinate injected intramuscularly. When recovery from the encephal-

6. Elvehjem, C. A.; Madden, R. J.; Ström, F. M., and Welch, D. W.: The Isolation and Identification of the Anti-Blacktongue Factor. *J. Biol. Chem.* 123: 137 (March) 1938.
7. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra. *J. A. M. A.* 110: 122 (Feb. 26) 1938.
8. Fouts, P. J.; Helmer, O. M.; Lepkovsky, Samuel, and Jell, T. H.: Treatment of Human Pellagra with Nicotinic Acid. *Proc. Soc. Exper. Biol. & Med.* 37: 495 (Nov.) 1937. Smith, D. T.; Ruff, J. M., and Smith, Susan G.: Pellagra Successfully Treated with Nicotinic Acid: A Case Report. *J. A. M. A.* 109: 2954 (Dec. 18) 1937. Barrett, C. N.: Nicotinic Acid in the Treatment of Pellagra. *J. A. M. A.* 111: 1113 (Aug. 13) 1938.

2. Spies, T. D.: Personal communication to the authors.
3. Sydenstricker, V. P.: Personal communication to the authors.
4. Matthews, R. S.: Pellagra and Nicotinic Acid. *J. A. M. A.* 111: 1148 (Sept. 24) 1938.
5. Cleckley, H. M.; Sydenstricker, V. P., and Geeslin, L. E.: Nicotinic Acid in the Treatment of Atypical Psychic States Associated with Malnutrition. *J. A. M. A.* 112: 2107 (May 27) 1939.

pathic syndrome was definite, usually on the third to the fifth day of treatment, the patients were given a high caloric diet rich in all vitamins, supplemented by 18 Gm. of vegex, while nicotinic acid by mouth in smaller doses was continued for from two to ten additional days. Further treatment depended on other manifestations, such as the presence of polyneuritis or scurvy or the riboflavin deficiency syndrome.⁹ If one or more of these deficiency diseases was present the patient was given thiamin chloride, ascorbic acid or riboflavin as indicated.¹⁰

RESULTS

Twenty-two consecutive patients with the encephalopathic syndrome were treated with nicotinic acid, seven of whom died, giving a mortality of 31.8 per cent. This death rate should be compared with the mortality of 95.7 per cent in forty-seven subjects treated by hydration alone, the mortality of 100 per cent in fifteen subjects treated by hydration plus thiamin chloride and the mortality of 62.2 per cent in sixty-six subjects treated by hydration plus the entire vitamin B complex. In the three groups not given nicotinic acid each subject who died did so without prior recovery from the encephalopathic syndrome. In the group treated with nicotinic acid, four of the seven subjects who died did so one, two, four and ten days respectively after the disappearance of the encephalopathic syndrome and of diseases probably independently fatal (pneumococcal pneumonia, cirrhosis of the liver, *Streptococcus haemolyticus* sepsis, multiple lung abscesses). On this basis the "corrected mortality" in the group treated with nicotinic acid is 13.6 per cent, as compared with 89.4, 100 and 51.5 per cent corrected mortality in the groups of patients not treated with nicotinic acid. The three subjects in the group treated with nicotinic acid who died while still exhibiting the encephalopathic syndrome did so within twelve, sixteen and twenty-four hours respectively after the first dose of nicotinic acid. None of these three subjects manifested any beneficial effect due to the nicotinic acid therapy, even temporarily.

COMMENT

It seems unlikely that the response obtained for the patients treated with nicotinic acid could be due to some other factor. Hydration alone failed, hydration plus thiamin chloride failed, hydration plus vitamin B complex was partially effective but hydration and nicotinic acid was successful in a large majority of cases. Assuming that nicotinic acid is the effective therapeutic agent, the significant decrease in mortality in the group treated with preparations containing the vitamin B complex can be attributed to the nicotinic acid content of those preparations. The failure of the same preparations in more than half of the treated subjects can be attributed to their relatively small content of nicotinic acid. That the results in the group treated with nicotinic acid were due to chance seems unlikely. Each group represents consecutive admissions and each group seems large enough for the results to be significant. It is noteworthy that before the use of nicotinic acid we had never witnessed recovery in four consecutive cases but had witnessed death in more than fifteen consecutive cases of the encephalopathic syndrome.

9. Jolliffe, Norman; Fein, H. D., and Rosenblum, L. A.: Riboflavin Deficiency in Man. *New England J. Med.* 221: 921 (Dec. 14) 1939.

10. The nicotinic acid used in this study was supplied by Merck & Co., Inc., and by the S. M. A. Corporation; the sodium nicotinate, thiamin chloride, ascorbic acid and riboflavin were supplied by Merck & Co., Inc.; The vegex and brewers' yeast were supplied by Vegex, Incorporated; the liver fractions were supplied by the Lederle Laboratories.

The fact that only about half of our subjects presented other signs of deficiency of nicotinic acid, and the fact that in endemic pellagra the encephalopathic syndrome occurs only in the most advanced and severe cases² does not necessarily contravene the evidence that this encephalopathic syndrome is a manifestation of deficiency of nicotinic acid. Our explanation, which of course is speculative, is as follows: As a complete deficiency of riboflavin leads to a different clinical picture than partial riboflavin deficiency,¹¹ there may well be a similar difference in nicotinic acid deficiency. The encephalopathic syndrome represents, we believe, a complete nicotinic acid deficiency, while the pellagra syndrome (stomatitis, the common psychic symptoms¹² and possibly the dermatitis) represents a partial deficiency of nicotinic acid not complete enough to produce the encephalopathic syndrome. If this is so, patients having both pellagra and the encephalopathic syndrome would represent the picture of a partial deficiency of nicotinic acid of sufficient duration to cause the structural changes recognized as pellagra, on which has been superimposed a complete nicotinic acid deficiency, while patients showing the encephalopathic syndrome without signs of pellagra would represent a complete nicotinic acid deficiency which develops so rapidly that the structural changes in the mouth and skin characteristic of pellagra do not have time to occur.

Whether this explanation of the *modus operandi* is the correct one or not, it seems to us entirely justifiable, on the basis of our observations, to attribute the etiology of the encephalopathic syndrome which we have described to nicotinic acid deficiency; as such, its proper label should be "nicotinic acid deficiency encephalopathy." By this designation we do not mean to imply that there are not other causes of encephalopathy, for disturbances in brain metabolism may and do occur as a result of other factors than lack of nicotinic acid.¹³ It is not to be expected that nicotinic acid should be effective in those cases or that its administration in appropriate instances will always result in cures, for the deficiency may be advanced to an irreversible stage.

SUMMARY AND CONCLUSIONS

We have observed 150 cases of an encephalopathic syndrome characterized by clouding of consciousness, cogwheel rigidities and uncontrollable grasping and sucking reflexes, which may or may not be associated with polyneuritis due to vitamin B₁ deficiency, with pellagra or with the oculomotor signs of central neuritis. Patients manifesting this syndrome treated by hydration or hydration plus thiamin chloride almost invariably die; patients treated by hydration plus substances rich in the vitamin B complex show a moderate drop in mortality, but when these patients are treated by hydration plus nicotinic acid a marked drop in their mortality results. There is a probability that this syndrome represents a complete deficiency of nicotinic acid. Encephalopathy may occur in other diseases and be

11. Street, H. R., and Cowgill, G. R.: Acute Riboflavin Deficiency in the Dog. *Am. J. Physiol.* 125: 323 (Feb.) 1939. Sebrell, W. H., and Onstott, R. H.: Riboflavin Deficiency in Dogs. *Pub. Health Rep.* 53: 83 (Jan. 21) 1938. Sebrell, W. H.; Onstott, R. H., and Hunt, D. J.: The Treatment of Blacktongue with a Preparation Containing the "Filter Factor," and Evidence of Riboflavin Deficiency in Dogs. *ibid.* 52: 427 (April 9) 1937. Cowgill, G. R.: Personal communication to the authors.

12. Spies, T. D.; Aring, C. D.; Gelperin, J., and Dean, W. B.: The Mental Symptoms of Pellagra: Their Relief with Nicotinic Acid. *Am. J. M. Sc.* 196: 461 (Oct.) 1938. Spies, T. D.; Grant, J. M.; Stone, R. E., and McLester, J. B.: Recent Observations on Treatment of 600 Pellagrins with Special Emphasis on Use of Nicotinic Acid in Prophylaxis. *South. M. J.* 31: 1231 (Dec.) 1938.

13. Jolliffe, Norman: Effects of Vitamin Deficiency on Mental and Emotional Processes. *Tr. A. for Research in Nerv. & Ment. Dis.* 19: 144, 1939.

caused by other factors. We believe, however, that the specific encephalopathic syndrome described, which responds to adequate nicotinic acid therapy, unless advanced to an irreversible stage, should be designated and treated as nicotinic acid deficiency encephalopathy.

REPORT OF CASES

The following cases¹⁴ are representative of the twenty-two cases in the series reported in this paper.

CASE 1.—History.—A newspaper woman aged 34, admitted to the medical service of the psychiatric division Nov. 6, 1938, was confused and disoriented, had a slow, thick, slurred speech and was unable to give an adequate history. A friend stated that she had been drinking heavily and eating little for the past six months and that during the last three weeks the drinking was very excessive and the abstention from food practically complete.

Examination.—The patient was poorly developed and poorly nourished and had a temperature of 102 F. and a pulse rate of 108, without respiratory distress or cyanosis. There was no evidence of a head injury. Examination of the eyes revealed no abnormalities, but owing to lack of cooperation from the patient the fundi could not be visualized. There was no stomatitis or glossitis. The blood pressure was 114 systolic, 68 diastolic. Examination of the lungs could not be done satisfactorily. A few moist rales were heard and slight dulness was noted over the left lower lobe. The heart, abdomen and extremities were not remarkable. All the tendon reflexes were intact. There were no sucking or grasping reflexes, no cogwheel rigidities and no signs of meningeal irritation. The diagnosis on admission was chronic alcoholism and bronchopneumonia.

Course.—X-ray examination the day of admission revealed a small patch of consolidation in the left lower lobe. The sputum contained unclassified pneumococci but the cultured blood was sterile. The patient was treated for pneumococcal pneumonia. By the fourth day all signs in the chest had disappeared but the temperature remained elevated at between 103 and 104 F. During this period the patient continued to be dull and apathetic; added neurologic signs did not develop and the cause of the fever was not determined. X-ray examination showed clearing of the small area of pulmonary consolidation. A second blood culture was sterile and agglutination test for *Bacillus typhosus*, *Bacillus paratyphosus* A and B, *Brucella melitensis* and *Bacillus dysenteriae* gave negative results. On the fifth day of hospitalization, sucking and grasping reflexes were obtained. Neither cogwheel rigidities of the extremities nor signs of oculomotor disturbance, nor evidence of stomatitis, glossitis or polyneuritis were elicited at this time. Because of a red blood cell count of 2.2 million the patient was given a transfusion of 500 cc. of whole blood. On the sixth day of hospitalization she was definitely worse. She was unable to eat, there was marked clouding of consciousness, the sucking and grasping reflexes noted on the fifth day remained and, in addition, cogwheel rigidities of the extremities were present. She appeared moribund. She was then given by nasal catheter 100 mg. of nicotinic acid every hour for five hours in 180 cc. of 5 per cent dextrose in physiologic solution of sodium chloride. This regimen was continued during the next two days. An hour after the first dose of nicotinic acid the patient no longer appeared moribund. The clouding of consciousness was definitely lessened, so that she was aware of her surroundings. Within twenty-four hours of the beginning of nicotinic acid therapy the sucking and grasping reflexes and the cogwheel rigidities could no longer be elicited. She was, however, confused and disoriented and confabulated freely. The patient's temperature on this day did not rise above 100.5 F. She continued to grow stronger and more cooperative each day. On the third day after the institution of nicotinic acid therapy the temperature fell to normal. During the next thirteen days

the patient was given the regular house diet and a maintenance dose of 100 mg. of nicotinic acid daily. After eight days of nicotinic acid therapy the patient became oriented and showed no apparent memory defects. The subsequent recovery period was uneventful and she was discharged cured forty-one days after the institution of nicotinic acid therapy. Following a month of convalescence she returned to work as a staff writer on a newspaper. The final diagnosis was chronic alcoholism and nicotinic acid deficiency encephalopathy.

CASE 2.—History.—A 50 year old iron worker, admitted to the psychiatric division Jan. 11, 1939, did not supply a reliable history. His wife stated that he had been a heavy drinker for the past three years. One month before he had accidentally set fire to his bed while smoking and suffered first and second degree burns of the thigh. This accident confined him to bed, but he continued to consume a quart or more of whisky daily until ten days before his admission, when he became confused and delirious. A few days prior to admission he had become unresponsive. There was a history of "rheumatism" seven years before, the details of which could not be ascertained.

Examination.—The patient was fairly well developed and well nourished. The temperature, pulse and respiratory rates and the blood pressure were normal. Mentally the patient was dull. His speech was thick, rambling and almost unintelligible. There was no evidence of skull injury. Examination of the eyes, mouth, heart, lungs and abdomen revealed no abnormalities. The extremities showed only the burns on the thigh, which were healing. The deep tendon reflexes were intact and no abnormal reflexes could be elicited. There were no signs of meningeal irritation.

Course.—The patient continued in a dull, apathetic state. He was maintained with the house diet and nourishing fluids. During the first eight days his temperature varied from 100 to 101.5 F. He became progressively weaker and less responsive. On the eighth day he showed clouding of consciousness, uncontrollable sucking and grasping reflexes and cogwheel rigidities of the extremities. On the same day moderate eyeball tenderness and a scarlet redness of the buccal mucous membranes developed. He was no longer able to take food by mouth and was transferred to the medical service. The patient was then given 100 mg. of sodium nicotinate intravenously in 1,000 cc. of 5 per cent dextrose in physiologic solution of sodium chloride and 100 mg. of sodium nicotinate intramuscularly. In addition he was given 100 mg. of nicotinic acid by nasal catheter every hour for ten hours, together with 180 cc. of 5 per cent dextrose in physiologic solution of sodium chloride per hour. The following day the sucking and grasping reflexes, the cogwheel rigidities of the extremities and the scarlet redness of the oral mucous membranes had disappeared, and the temperature was normal. The patient's speech was still thick and he was still confused and disoriented. The next day he was still disoriented but the encephalopathic signs had not returned. Parenteral administration of sodium nicotinate was stopped, but he continued to receive 1,000 mg. of nicotinic acid orally each day. Mental improvement progressed so that on the fifth day of therapy the patient presented no abnormalities. He was discharged from the hospital after ten days of nicotinic acid therapy. The final diagnosis was chronic alcoholism, nicotinic acid deficiency encephalopathy and pellagrous stomatitis.

CASE 3.—History.—An unemployed Puerto Rican laborer aged 47 was admitted to the medical service of the psychiatric division Feb. 21, 1939, because of progressive stupor. No other history could be obtained.

Examination.—The patient, who was well developed, was semistuporous. The temperature, pulse and respiratory rates and the blood pressure were normal. There was no evidence of skull injury. There was marked corneal opacity of the left eye. The right pupil was in midsyllation and reacted sluggishly to light. There was a nystagmus on lateral gaze but no ophthalmoplegia. The right fundus was normal. The oral mucous membranes were scarlet red, with marked ulceration and a pearl gray exudate of the buccal mucous membranes opposite the molar teeth and under the tongue. The tongue

14. In these reports laboratory examinations are not noted unless the results are significant. The routine determinations included urinalysis, chemical analysis and serologic reaction of the blood and spinal fluid, spinal fluid cell count, complete blood count and study of the stained smear, x-ray examination of the skull, heart and lungs, and electrocardiographic tracings.

was swollen, showed indentation of the teeth, and was smooth and scarlet red. The heart was not remarkable and the lungs were apparently clear, although the examination was not satisfactory. The abdomen was normal. The extremities showed no cyanosis, clubbing, edema or dermatitis. There were marked sucking and grasping reflexes and cogwheel rigidities of the extremities. The ankle jerks were absent but all other tendon reflexes were obtained. Neither muscle tenderness nor hyperesthesia of the skin was elicited. The Babinski and Hoffmann reflexes were not present and there were no signs of meningeal irritation. There was perseveration of sounds, and the speech was unintelligible.

Course.—The patient was immediately given 100 mg. of sodium nicotinate in 1,000 cc. of 5 per cent dextrose in physiologic solution of sodium chloride intravenously and 100 mg. of sodium nicotinate intramuscularly. In addition, 100 mg. of nicotinic acid was given every hour for ten hours, together with 180 cc. of 5 per cent dextrose in physiologic solution of sodium chloride by nasal catheter. On the following day the patient was considerably improved in that the stupor had disappeared and he was able to eat the basal diet. The other encephalopathic manifestations and the character of the speech were unchanged. The scarlet redness of the oral mucous membranes and of the tongue had markedly lessened. On the third day there was further general improvement. The redness of the oral mucous membranes disappeared; but sucking and grasping reflexes remained, although they were difficult to elicit, and the cogwheel rigidities were still present. The patient's speech was unchanged, consisting of unintelligible perseveration of sounds. On the fourth day the condition was unchanged. The patient's mouth was natural; sucking and grasping reflexes and cogwheel rigidities were inconstantly present and were difficult to elicit. At this time he was being given the regular house diet supplemented by 18 Gm. of vegex. Parenteral administration of sodium nicotinate was stopped but he continued to receive nicotinic acid orally in doses of 100 mg. a day until the sixteenth day of hospitalization. By the sixth day no encephalopathic manifestations could be elicited; the patient's speech was now intelligible but he still perseverated. He was able to be up in a chair. On the seventh day he was made ambulant. By the tenth day his speech was clear, except for slight perseveration, and he was oriented as to place but not as to time. His general physical condition improved progressively but he continued to show marked gaps in memory and occasional perseveration in speech. On the thirty-first day of hospitalization, when he was transferred to a state hospital for mental disease, he was definitely oriented as to place but incompletely oriented as to time. The final diagnosis was chronic alcoholism, nicotinic acid deficiency encephalopathy and pellagrous stomatitis.

CASE 4.—History.—An unemployed white man aged 30 was admitted to the medical service of the psychiatric division Jan. 7, 1939, in stupor. His wife stated that he had been a heavy drinker for ten years and had been rarely, if ever, sober in the past six months, during which time his food intake had been grossly inadequate. For two weeks prior to admission he was confined to bed because of weakness. Since two days before he had been unable to form intelligible words, though moaning and groaning sounds were frequent.

Examination.—The patient was well developed but poorly nourished, with a temperature of 104.6 F., a pulse rate of 144 and a respiratory rate of 26 per minute without respiratory distress. There was marked clouding of consciousness. There was no evidence of head injury. The pupils were fixed to light, and the left was larger than the right. The lips were dry and crusted. The oral mucous membranes were a scarlet red with a superficial grayish white ulceration opposite the molar teeth and on the floor of the mouth. There was nuchal rigidity. The heart, lungs and abdomen were not remarkable. The extremities showed no cyanosis, clubbing, edema or dermatitis. There appeared to be moderate atrophy of the calf muscles. There were marked sucking and grasping reflexes and cogwheel rigidities of the extremities. The biceps, triceps and knee jerks were present, but ankle jerks could not be elicited. The Hoffmann and Babinski reflexes were not obtained.

The spinal fluid was clear and not under increased pressure, and the cell count was normal. The serologic reaction of the blood and spinal fluid and the chemistry were normal.

Course.—Administration of 5 per cent dextrose in physiologic solution of sodium chloride by nasal catheter, in amounts of 180 cc. every hour, with 100 mg. of nicotinic acid each hour, was begun immediately. In addition, 1,000 cc. of 5 per cent dextrose in physiologic solution of sodium chloride with 100 mg. of sodium nicotinate was administered intravenously, and 100 mg. of sodium nicotinate was injected intramuscularly. The patient exhibited no improvement in the signs of the encephalopathic syndrome and died twelve hours after admission. The final diagnosis was chronic alcoholism, nicotinic acid deficiency encephalopathy and pellagrous stomatitis. Permission for an autopsy was not obtained.

CASE 5.—History.—A Negro laborer aged 31 was admitted to the medical service of the psychiatric division Aug. 31, 1938, as a transfer from another service into which he had been admitted four days previously, complaining of sore mouth, difficulty in swallowing, diarrhea and poor appetite of ten days' duration. He had had scaling and thickening of the skin of his hands for about one year. Since 1925 he had been drinking from a pint to a quart of whisky daily. His diet was grossly inadequate. He had had malaria four years before but stated that there had been no history of a venereal disease.

Examination.—The patient was acutely ill, fairly well developed and well nourished and in no cardiac or respiratory distress, with a temperature of 99.2 F., a pulse rate of 100 and a respiratory rate of 20 per minute. He was dull, slow in response, confused and disoriented. His head showed no evidence of trauma. He could barely open his mouth. The tongue was swollen. The oral mucous membranes were scarlet red, with marked ulceration covered by a grayish white slough. The heart, lungs and abdomen were not remarkable. There was no cyanosis, clubbing, or edema of the extremities. The dorsum of the hands showed a scaly, dry, thickened, pigmented dermatosis. The face, neck and groins were clear. The knee jerks and ankle jerks were absent. There was no apparent tenderness of the calf muscles or plantar hyperesthesia, nor were there any sucking or grasping reflexes or cogwheel rigidities at this time.

Course.—The patient was maintained with the basal diet and 180 cc. of 5 per cent dextrose in physiologic solution of sodium chloride every hour orally until the second day, when his condition was noted to be somewhat worse. He became lethargic, and sucking and grasping reflexes and cogwheel rigidities of the extremities developed. He was then given 100 mg. of nicotinic acid by mouth every hour for five hours. At this time, because of the sore mouth, the intake of food was very small. This regimen was continued for four days. On the second day of nicotinic acid therapy the oral lesions were definitely improved, with marked diminution in the scarlet redness and ulceration. The diarrhea lessened. The sucking and grasping reflexes and cogwheel rigidities, however, could still be obtained. On the fourth day of nicotinic acid therapy the mouth was quite natural except for a slight remaining redness of the inner surface of the lower lip. The encephalopathic signs had cleared, although the patient still exhibited memory gaps and periods of confusion. On the fifth day the regimen was changed to a high caloric, vitamin rich diet, supplemented by 4 cc. of vegex three times a day. On this and the next two days the patient was also given 50 mg. of nicotinic acid daily. From the second day following his admission to this service the patient's temperature ran an irregular, spiking course, ranging between normal and 103 to 104 F., with the pulse in proportion. He began to cough and raise a dark sputum, although the lungs were clear at that time. On the sixth day signs of consolidation developed in the right lower lobe, with dullness, diminishing breath sounds and crepitant rales. The sputum contained no acid-fast organisms but did show unclassified pneumococci. From this time the patient's course was progressively downhill, although none of the encephalopathic manifestations reappeared. The signs spread through the right and left lungs. The patient raised large amounts of foul sputum and had an irregular, spiking temperature. X-ray examination revealed large cavities in the bases of both lungs

with fluid levels and many smaller cavities throughout both lungs. The patient died fifteen days after admission to this service and ten days after the disappearance of the encephalopathic syndrome. Permission for an autopsy was not obtained. The final diagnosis was chronic alcoholism, multiple lung abscesses, nicotinic acid deficiency encephalopathy, pellagrous stomatitis and peripheral neuritis.

Twenty-Sixth Street and First Avenue.

SECTION OF THE HUMAN HYPOPHYSIAL STALK

ITS RELATION TO DIABETES INSIPIDUS AND
HYPOPHYSIAL FUNCTIONS

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BALTIMORE

That diabetes insipidus in man is caused by lesions in the environs of the hypothalamus is well established by human clinical and pathologic material. It is indeed pathognomonic of a lesion of some type in this general region. However, the precise limits of the neurogenic center have not been established. For example, the relationship of the stalk of the hypophysis (infundibulum), the supra-optic and paraventricular nuclei, the tuber cinereum and the component parts of the hypophysis itself still remain in dispute. Human pathologic material, particularly tumors, although the safest source

of interpretation as applied to man, has nevertheless been of little value in sharply localizing this center because, with few exceptions, the lesions have been so large that more than one of the disputed areas have been involved.

The animal experiments on this problem are open to even more criticism, because the component parts of the so-called hypothalamic-hypophysial ensemble are so closely related that it is virtually impossible to attack one part without affecting others. In dogs and cats the hypophysis lies in such direct contact with the base of the brain that the hypophysial stalk is little more than a name. It is impossible to divide or to place a clip on the infundibulum without at the same time traumatizing both the hypophysis and the hypothalamus. Moreover, in these animals hypophysial cells are spread along the pars tuberalis and always the microscopic presence or absence of these cells constitutes support or objection to any particular theory. Reichert and I¹ inspected this region directly and produced lesions with the greatest possible precision but concluded from the capricious results

and Bremer² concluded from their canine experiments that the center was at the base of the brain and that the hypophysis had nothing to do with diabetes insipidus. We were inclined to agree with them. On the other hand, Biggart and Alexander³ and Fisher, Ingram and Ranson,⁴ who have concentrated on the experimental attack, are quite dogmatic in concluding from results which appear to be no less capricious than our own that the hypophysis is a necessary part of the anatomic setup for water control and therefore for the induction of diabetes insipidus. Both Biggart and the Northwestern University investigators have probably done the best experimental work that is possible and their work is quite generally accepted, and yet their conclusions are not satisfying to one who has been intimately associated with the clinical side of diabetes insipidus. It is their opinion that polyuria and polydipsia are due to the loss of an antidiuretic hormone which is secreted by the posterior lobe of the hypophysis and that the loss of this hormone is due to the deprivation of its nerve supply which passes from the supra-optic nuclei down the infundibulum to the posterior lobe. They also agree that the intact, or at least partially functioning, anterior lobe is an indispensable part of the mechanism—a conception first advanced by von Hann⁵ based on a group of human hypophysial material—which was poorly chosen, however, for such a hypothesis.

Their conclusions, however, do not answer the following clinical facts: (1) Hypophysial tumors confined to the sella turcica (i. e., not affecting the hypophysial stalk or the hypothalamus) never induce diabetes insipidus regardless of the amount of destruction of the hypophysis; (2) operations on the human hypophysis for hypophysial tumors are never followed by diabetes insipidus unless the stalk or base of the brain is traumatized.

Recently the supra-optic and paraventricular nuclei have been postulated as part of the neurogenic mechanism. They may well be part or even an essential part of a center for water control, but the evidence is not convincing. In this connection it is worthy of note that in a recent assembly of six cases of colloid cysts filling the third ventricle I did not find a history of diabetes insipidus in one before operation, and in none did it follow their removal. Of nineteen other solid tumors filling the third ventricle and producing greater pressure on the hypothalamus, there was a history of polyuria and polydipsia in only three. These facts only make one wonder why compression of the supra-optic and paraventricular nuclei, if they are parts of the center, produces diabetes insipidus so infrequently.

Two quite contradictory facts at once confuse the picture when an attempt is made to draw final deductions concerning a possible hormone from the posterior lobe: (1) Injections of the posterior lobe usually, but not always, markedly diminish the output of urine and intake of fluids in diabetes insipidus, and yet (2) the posterior lobe is excessively a nervous structure and does not contain glandular cells unless one accepts the

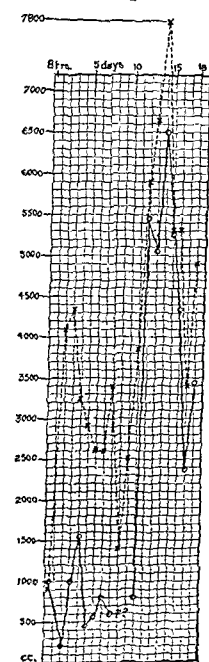


Chart 1.—Degree of polyuria and polydipsia immediately after section of the hypophysial stalk, Jan. 24, 1928. Fluid intake is indicated in these charts by dashes and the urine output by the solid line.

results that the experimental attack could not, in its present form at least, offer a solution of the problem. Camus and Roussy² and soon thereafter Bailey

1. Dandy, W. E., and Reichert, F. L.: Studies on Experimental Hypophysectomy: I. Effect on the Maintenance of Life. *Bull. Johns Hopkins Hosp.* 37:1 (July) 1925. Dandy, W. E.: Benign Tumors of the Third Ventricle: Their Diagnosis and Treatment, Springfield, Ill., Charles C. Thomas, Publisher, 1933.
2. Camus, J., and Roussy, M. C.: Présentation de sept chiens hypophysectomisés depuis quelques mois. *Soc. de Biol.* 74:1386, 1913.

3. Bailey, Percival, and Bremer, Frédéric: Experimental Diabetes Insipidus. *Arch. Int. Med.* 28:773 (Dec.) 1921.

4. Biggart, J. H., and Alexander, G. L.: Experimental Diabetes Insipidus. *J. Path. & Bact.* 48:405 (March) 1939.

5. Fisher, Charles; Ingram, W. R., and Ranson, S. W.: Diabetes Insipidus and the Neurohormonal Control of Water Balance: A Contribution to the Structure and Function of the Hypothalamic Hypophysial System. *Ann Arbor, Mich., Edward Brothers, Inc., 1931.*

6. von Hann, F.: Ueber die Bedeutung der Hypophysenvorderlappen bei Diabetes insipidus. *Frank. Ztschr. f. Path.* 21:337, 1918.

occasional acini of the pars intermedia that intrude or unless the pars intermedia is included as part of the posterior lobe.

The transfer of results obtained on experimental animals to man is never too certain. The solution of this problem will doubtless be from well selected cases of human material. In man there is complete anatomic separation of the hypothalamus and hypophysis by a

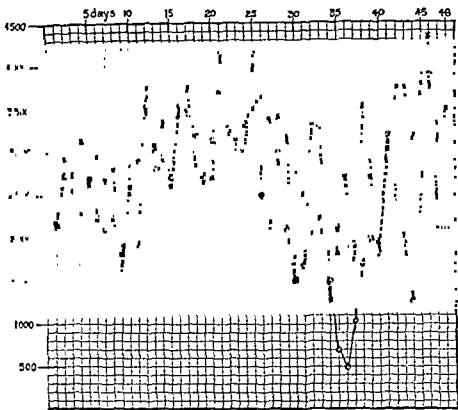


Chart 2.—Fluid intake and urine output on second admission, Feb. 6, 1933.

hypophyseal stalk that is a centimeter or more in length, and hypophyseal cells are not scattered along its course. In due time small tumors, or perhaps other lesions, will be found involving only one part of the ensemble. Indeed one perfect specimen of this type has been described by Fitcher.⁷ It was a small metastatic tumor at the base of the brain beginning at the cerebral side of the infundibulum and extending intracerebrally. The hypophysis itself was far removed from any direct effect of the growth. A precise surgical experiment is added in the present communication—sharp transverse section of the hypophyseal stalk at its middle and without trauma to either the base of the brain or the hypophysis; a permanent polyuria and polydipsia followed. This case is presented not only for its effect on the production of diabetes insipidus but also for the effects on the hypophysis—all essentially negative.

REPORT OF A CASE

A girl aged 17 years was admitted to the Johns Hopkins Hospital Jan. 21, 1928, because of loss of vision. Before admission she had been studied in the neurologic dispensary, where no definite diagnosis was made. At this time she had been totally blind in the left eye for ten weeks, and, although there was no well defined hemianopia in the right eye, I thought there was a very definite difference in the intensity for color in the nasal and temporal fields, the color being more clearly recognized in the nasal field. Moreover, she had volunteered that she could see things more plainly to her left than to her right with the right eye. This led me to suspect a tumor in the region of the optic tracts. Visual acuity was 15/200 in the right eye. There were no other subjective complaints or objective signs.

The hypophyseal region was explored on the left (blind) side January 24. The optic nerves looked quite normal from the superior view. Since she was totally blind in the left eye, this optic nerve was divided in order to make a further search beneath the optic tracts. The hypophyseal stalk was then in

full view. To obtain a better view, the hypophyseal stalk was divided with scissors midway between the base of the brain and the diaphragm of the sella. This was done without the slightest bleeding and without sponging either to the cut side of the stalk or to the contiguous region. The stalk was about 1 cm. long. The operation, therefore, serves as an example of a precise experiment in which the sharply defined transection at the middle of the stalk is responsible for the subsequent effects. It also excludes from consideration any direct participation of the base of the brain or of the hypophysis itself.

On the evening of the operation, soon after consciousness appeared, there was marked thirst, and this was quickly followed by a very high output of colorless urine with a very low specific gravity. Chart 1 shows the course of the polyuria and polydipsia during her subsequent stay in the hospital, a period of nineteen days. A postoperative specimen of urine examined for sugar was normal.

The patient returned to the hospital Dec. 5, 1930, nearly three years after the operation. Her vision had remained unchanged until eight days previously, when she became totally blind in the remaining eye. In 1928 she had had numbness and weakness of the right leg lasting a month and clearing completely. Another similar attack occurred in May 1930 but involved both sides of the body. She was pregnant at the time. The sensory and motor changes disappeared almost completely in six weeks. It was now evident that the correct diagnosis was multiple sclerosis. She said that ever since the operation she had been troubled with severe thirst and frequency of urination—it was necessary for her to get up several times every night to void. Vision returned to the previous level soon after she left the hospital.

Feb. 6, 1933, the patient again entered the hospital because of advanced sensory and motor changes over the entire body. A fluid and urine chart was kept during her stay of eight days (chart 2).

In August 1933 she again entered the hospital. She now appeared to be in the terminal stages of the disseminated disease and was practically helpless. The polyuria and polydipsia still persisted unchanged (chart 3).

She was again seen during October 1937. Her general recovery had been remarkable. She was doing her own house-

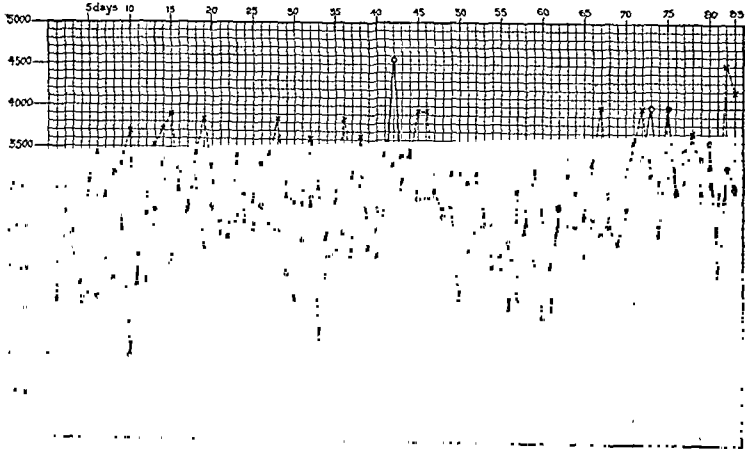


Chart 3.—Fluid intake and urine output on third admission, June 3, 1933. The three charts cover a period of five and one half years. The polyuria and polydipsia remain practically unchanged after eleven years.

work and walked without support, although with a difficulty of gait. The vision in the right eye (4/200) was good enough to permit reading. However, there was only a small central field. The urinary output and intake of water were essentially unchanged; voluntary control over the urine had returned. She looked well.

The last word from her was received by letter May 1, 1939, more than eleven years after the operation. She said "My general condition remains about the same as when I last saw you, except that I cannot walk quite so well. My weight remains the same. The thirst and increased urination are unchanged. I get up two and three times every night to urinate."

7. Fitcher, T. B.: Diabetes Insipidus and Lesions of the Midbrain. *Am. J. M. Sc.* 178: 837 (Dec.) 1929.

SUMMARY

From a very sharply defined lesion, i. e., division of the stalk of the hypophysis without trauma to the contiguous parts of the brain, a permanent (eleven years) polyuria and polydipsia ensued. It is therefore evident that division of the stalk of the hypophysis is solely responsible for polyuria and polydipsia. This, of course, does not mean that injury to, or a lesion on, the base of the brain would not also produce the same disturbances. In fact there is every reason to believe that it would do so. Futcher's case is ample evidence. Clinical experience has shown that trauma to the hypophysis does not produce polyuria and polydipsia.

NOTES ON HYPOPHYSIAL FUNCTIONS

The patient subsequently married. A baby was born Sept. 1, 1930 (two years and nine months after section of the hypophyseal stalk). Pregnancy and labor were normal. She nursed the baby for three months and had ample milk.

In 1933 she had a second child at full term and by normal delivery. This baby was nursed four months; supplementary feedings became necessary when the amount of milk became less abundant.

The menstrual periods were regular following the operation and for several years thereafter. In 1934 some irregularity first appeared; at times a period would be passed.

There have been many blood pressure readings. Before operation the pressure was 140/90, 136/80 and 135/90. Two years after the operation it was 120/76. Five years later it was 140/90, 130/90, 138/80, 105/75, 118/68 and 110/70.

Her weight was 122 pounds (55.3 Kg.) at the time of the operation and 140 pounds (63.5 Kg.) in 1933, five years after the operation.

The skin has retained its normal color; there has been no loss of hair on the head, axillae or pubic region.

Numerous examinations of the urine have been made. There was no sugar in the urine in the first postoperative specimen and none in three subsequent specimens. On her subsequent admissions twenty-seven examinations were recorded and a trace of sugar was found on two occasions. Seven times a trace of albumin was found.

CONCLUSIONS

1. A sharply defined lesion transection of the hypophyseal stalk in man, without trauma to the base of the brain or to the hypophysis, produced a permanent (eleven years) polyuria and polydipsia.

2. This failed to disturb the known hypophyseal functions, such as (a) menstruation, (b) pregnancy, (c) lactation, (d) weight, (e) blood pressure, (f) sugar content of urine (there was no glycosuria immediately after the operation or subsequently except for a trace on two occasions).

Aircraft Toilets.—Water flushed toilets are not practical on board aircraft, owing to the weight of the water required. It is the practice of flying boats to vent the waste material directly overboard; but since this is prohibited in flying overland other methods of waste disposal must be used. Chemical toilets are frequently used but some of these are not satisfactory, owing to the odor of the chemical, which may itself be unpleasant. The best procedure is to vent the waste material into a tank, which then must be emptied, disinfected and deodorized at each stop. The toilet itself should likewise be scrubbed and disinfected at each stop regardless of the manner of waste disposal.—Armstrong, Harry G.: *Principles and Practice of Aviation Medicine*, Baltimore, Williams & Wilkins Company, 1939.

ADHESIONS OF CHOLECYSTO-
HEPATIC FLEXURE

NEW SYNDROME WITH SPECIFIC TEST

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Ten years ago I was impressed by a series of cholecystograms of a small nonfunctioning gallbladder contracted on a stone, in which the hepatic flexure of the colon remained in exact apposition in all the films made at different times (fig. 1).

Since that time I have collected some twenty cases, most of them proved by operation, of localized adhesions

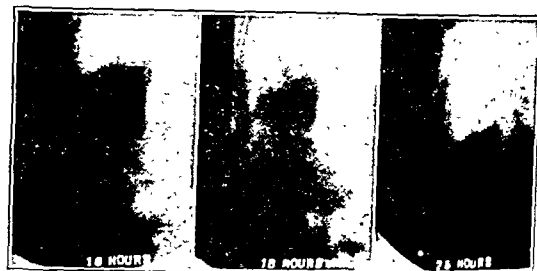


Fig. 1 (Mrs. G.).—Large gas-filled colon staying in apposition to stone.



Fig. 2 (Mrs. T.).—Excellent function, but colon fastened to tip.



Fig. 3 (Mr. H.).—Gas following contracting gallbladder.

of the hepatic flexure to the gallbladder. I have gradually worked up a description of this new syndrome together with a specific x-ray test for it.

PATHOLOGY AND MECHANICS

The hepatic flexure is adherent, frequently at a sharp angle, to an otherwise free gallbladder fundus. The gallbladder may fill, concentrate and empty normally, but the weight of the colon dragging on it produces the symptoms.

SYMPTOMS

The patients may complain of the usual type of noncolic gallbladder dyspepsia or there may be more atypical symptoms. There is dull pain in the epig-

Read before the Eastern Radiologic Society, Feb. 11, 1937.

gastrium or right upper quadrant of the abdomen, and in addition to gas pressure there may be nausea. There is not as much dyspepsia at night as in the usual case of cholecystitis, and a characteristic fact is that symptoms are present mostly during the day because of the upright position with its consequent pull.

There is apt to be tenderness in the upper right quadrant, especially in the upright position, and frequently muscle resistance.

DIAGNOSIS

A definite diagnosis can be made. The patient may be suspected of having a gallbladder disorder and yet cholecystograms may indicate perfect function. If then it is noted that localized gas in the colon remains in proximity to the same spot on the gallbladder in each of the films one may be reasonably sure of the diagnosis, even without the specific test to be described later (figs. 2, 3, 4 and 5). I have one case in which the colon is shown in the same spot with seven years elapsing between two sets of studies.

It is evident that instead of trying to rid the patient of gas by medication, as has been recommended, I want gas present to show the relationship. If one is not certain of adhesions after the usual cholecystograms, the specific test is indicated.

SPECIFIC TEST

The specific test for adhesions of the cholecysto-hepatic flexure consists in simultaneous examinations with barium and dye. A barium sulfate meal is given twenty-four hours before the first film, to fill the colon from above. An enema is not satisfactory. Thirteen hours before the first film the gallbladder dye is given as usual. If the first film shows an angulated colon in absolute proximity to a small spot on the fundus, a second film is made in three hours. If the relationship



Fig. 4 (Mrs. H.)—Large hepatic flexure adherent to tip.

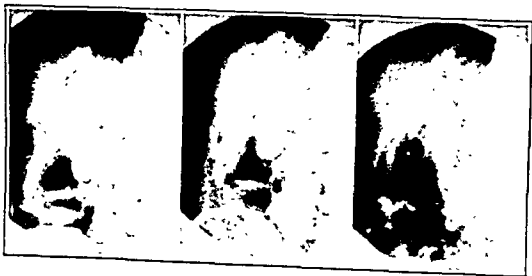


Fig. 5 (Miss E.)—Another example of localized adhesions.

of the two organs is exactly the same, a fat meal is given and another film made two hours later. If the colon follows the contracting gallbladder and the two shadows are as close as ever, the diagnosis is nearly 100 per cent accurate (fig. 6). If any doubt remains, a film may be made in the upright position to try to separate the organs.

RESULTS

By bringing out this cholecystographic interpretation I have stepped away from the routine interpretation, based on visualization of stones and dysfunction of filling, concentration or emptying, into what might be thought to be the borderland of anatomic diagnosis.



Fig. 6 (Mr. K.) Specific test, showing how adhesion to contracting gallbladder can almost be visualized.

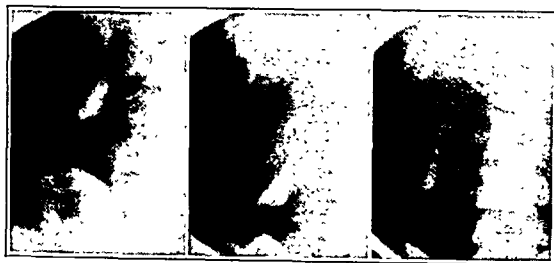


Fig. 7 (Mrs. G.)—Localized adhesions in case reported in text.

This extension might be thought to be extra hazardous with possibly many errors of commission, but such has not been the case in my experience. There have been few errors and, on the contrary, many cases have been correctly diagnosed which were previously pronounced "gallbladder normal." What is more important, these patients have been cured instead of being condemned to a continuance of their symptoms in the upper right quadrant for which no adequate cause could be found.

TREATMENT

Cholecystectomy is followed by as perfect results as in other types of gallbladder disease. If the gallbladder is entirely normal in appearance, it is possible that simple division of the adhesions, allowing the colon to drop and placing the patient in the postoperative sitting position, might suffice. I have not dared so far to try this. My last case shows that, had the gallbladder been left in as I was tempted to do, the patient might not have been relieved, as there was an unexpected pathologic condition inside the organ.

REPORT OF CASE

Mrs. J. L. G., aged 41, the mother of three children, complained Jan. 16, 1939, of gas dyspepsia for twenty-five years. The appendix had been removed twenty years before without benefit. Constipation had always been present and for three years there had been increasing soreness in the upper right quadrant. Pain without colic was present in the "pit of the stomach" an hour or so after meals.

The physical examination was negative except for well marked tenderness to moderate pressure starting under the right costal margin near the midline and extending outward toward the flank. There was a sensation either of a palpable gallbladder or of localized muscle resistance. All laboratory tests were negative. Gastrointestinal x-ray examination was negative. Cholecystograms were reported by the radiologist

to show a normal gallbladder. My own diagnosis was gallbladder adhesions of the hepatic flexure (fig. 7).

Operation Feb. 3, 1939, showed the adhesions exactly as pictured, only somewhat more extensive. At first I thought that I would leave the gallbladder in, after freeing it, but the serosa was a little dull. Fortunately it was taken out, as examination showed two small papillomas, a few small cholesterol bits in the mucosa and several loose bits of cholesterol (earliest strawberry gallbladder). The latest report is "I feel so good inside."

Operation is not advocated unless the patient has definite symptoms in the upper right quadrant sufficient to have indicated cholecystograms or until all other conditions have been ruled out by adequate examinations. It is recommended, however, when requirements have been met and the test shows the characteristic changes.

SUMMARY

1. The syndrome here described for the first time is produced by mechanical pull of localized adhesions between the hepatic flexure of the colon and the gallbladder.

2. The new test devised for the condition is very accurate.

3. Recognition of the condition and operation will bring cure to many sufferers from pain in the upper right quadrant who were formerly unrelieved.

The Farragut Medical Building.

TOXIC HEPATITIS AND ACUTE YELLOW ATROPHY

FOLLOWING MEDICATION WITH A CINCHOPHEN-CONTAINING "COLD CURE"

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The dangers of cinchophen medication have been repeatedly emphasized by many writers, who have reported large numbers of cases with toxic effects and a high mortality. Bryce¹ has collected reports of 190 cases of cinchophen poisoning occurring from 1913 to 1935, 43.6 per cent of the cases being fatal. Snyder and his co-workers² reported 712 deaths from acute yellow atrophy in the hospitals in the state of New York between 1923 and 1933. Evidence presented by Palmer and others³ suggests that the use of cinchophen may account for a large percentage of all cases of acute yellow atrophy. Palmer and his co-workers collected reports of 191 cases of liver damage following cinchophen medication with eighty-eight deaths, a mortality of 46.8 per cent. In six of twenty-one fatal cases of acute, subacute or chronic toxic necrosis or cirrhosis there was a history of cinchophen ingestion.³ There was possible circumstantial evidence of cinchophen medication in eight more cases of this series, which added up to a possible 67 per cent. Evidence from several large series indicates that once jaundice is caused by cinchophen death may be expected in approximately 50 per cent of cases.

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1. Bryce, D. A.: The Relation of Age and Sex to Incidence and Prognosis in Phenylcinchoninic Hypersensitivity, *J. Allergy* 9:514-518 (July) 1938.

2. Snyder, R. G.; Traeger, C. H.; Zoll, C. A.; Kelly, L. C., and Lust, F. J.: The Use of Cinchophen in the Treatment of Chronic Arthritis, *J. Lab. & Clin. Med.* 21:541-547 (Feb.) 1936.

3. Palmer, W. L.; Woodall, P. S., and Wang, K. C.: Cinchophen and Toxic Necrosis of the Liver: A Survey of the Problem, *Tr. A. Am. Physicians* 51:281-393, 1936.

In spite of the evidence of the high toxicity of the drug, its widespread use continues. White⁴ estimated in 1931 that 90,000 pounds (40,000 Kg.) of cinchophen are consumed annually in the United States. Hench⁵ reported that thirty-two drugs in common use contained cinchophen and estimated that 500 others undoubtedly contained it. Since many persons evidently take cinchophen without obvious toxic effects, it has been suggested that a special idiosyncrasy, an allergic type of reaction or previous liver damage must explain the cases of cinchophen poisoning. Persons of any age are susceptible. In Bryce's series there were fifteen patients under the age of 20 years, five of whom died. In the majority of cases the condition occurs in the middle or older age groups, probably because of the higher incidence of arthritis at these ages and the common use of cinchophen as an analgesic. Women may be more susceptible than men, as 63 per cent of Bryce's series of 190 patients were females.

It is doubtful whether a special idiosyncrasy can be invoked, since in many of the fatal cases large doses were taken for considerable periods of time before toxic effects appeared. Sugg⁶ has collected reports of thirty-two toxic cases with twenty-two deaths in which the untoward effects appeared only after an interval had elapsed between two series of doses. This is taken to indicate that the response was allergic, following the development of an acquired sensitivity. The prompt cutaneous manifestations, such as the erythematous, morbilliform and urticarial rashes appearing shortly after ingestion of the drug, suggest antigen-antibody response and an acquired sensitivity of allergic type. However, the weight of evidence as related to the toxic hepatitis following cinchophen medication suggests that liver damage is caused by direct action of cinchophen on the liver cells. The experimental work of Barbour and Fisk⁷ indicates that some injury to the liver can always occur but that it seldom progresses to the point of clinical recognition. In the great majority of cases with toxic effects there is no previous history suggesting liver damage. The changes initiated in the liver seem to be to a certain extent, at least, irreversible, since even with the best known treatment, initiated as soon as toxic symptoms are observed, nearly half of the patients who become jaundiced eventually die. Large doses may often be continued with apparent impunity for many months, when jaundice and death may suddenly intervene. Willcox⁸ has emphasized the time factor. He has pointed out that toxic hepatitis apparently resulting from cinchophen may come on many months after the cessation of cinchophen administration. Reichle⁹ has also emphasized this and has shown that the liver involvement as noted at necropsy may indicate a chronic process, although the patient dies within a few weeks after the appearance of symptoms. The long interval of time which may elapse between the ingestion of the drug and the onset of symptoms speaks against allergy as an explanation for the liver damage. It is likely that in a number of cases

4. White, E. P. C.: Study on Series of Arthritic Patients Under Continuous Mono-iodo-cinchophen Treatment with Special Reference to Action of Cinchophen Molecule on Liver Tract, *J. Lab. & Clin. Med.* 17:17-21 (Oct.) 1931.

5. Hench, P. S.: Derivatives of Cinchophen and Their Toxicity, *Proc. Staff Meet., Mayo Clin.* 7:427-428 (July 20) 1932.

6. Sugg, E. S.: Acquired Sensitivity to Cinchophen, *Am. J. M. S.* 195:473-479 (April) 1938.

7. Barbour, H. G., and Fisk, M. E.: Liver Damage in Dogs and Rats After Repeated Oral Administration of Cinchophen, Ethyl Ester of Paramethylphenylcinchoninic Acid (Tolysin), and Sodium Salicylate, *J. Pharmacol. & Exper. Therap.* 48:341-357 (July) 1933.

8. Willcox, Sir William: Toxic Jaundice, *Lancet* 2:1-6 (July 4), 56 (July 11), 111-117 (July 18) 1931.

9. Reichle, H. S.: Toxic Cirrhosis of the Liver Due to Cinchophen, *Arch. Int. Med.* 44:281-283 (Aug.) 1929.

in which recovery occurred the condition was diagnosed as "catarrhal jaundice," since it is frequently difficult to elicit the history of cinchophen medication or to relate the time of the appearance of symptoms to the medication.

The following two cases are reported to emphasize the dangers of cinchophen medication in patients not known to have an idiosyncrasy to the drug and as a plea against the use of a drug so toxic in the treatment of relatively innocuous conditions such as the common cold. The histories given by one of the patients, a graduate nurse, and by her husband, a physician, about herself and about their son, give these case reports a sharp definition comparable to a laboratory experiment.

REPORT OF CASES

CASE 1.—Feb. 13, 1939, a 37 year old married woman, a graduate nurse and the wife of a physician, entered Barnes Hospital complaining of nausea, vomiting and jaundice which had been present for about two weeks. She had severe pains in the right upper abdominal quadrant. The stools had been clay colored for about two weeks, and she had experienced some itching of the skin. The pain had at times been severe enough to require one-fourth grain (0.016 Gm.) of morphine by hypodermic injection for relief. Her appetite had been exceptionally poor throughout the present illness. For several years previously the patient had experienced mild gastrointestinal attacks and had lost some weight (her weight dropped from 165 to 139 pounds, or from 75 to 63 Kg.), but she was still moderately well nourished.

Her physical examination on entry revealed generalized icterus. The nutritional state was good. The blood pressure was 92 systolic, 58 diastolic. Examination of the head, eyes, ears, nose and throat disclosed nothing remarkable. No abnormalities were noted on examination of the heart or lungs. There was definite tenderness in the right upper quadrant of the abdomen. The liver edge was not palpable. The spleen could not be felt. The extremities were normal in appearance. The reflexes were physiologic. The temperature was 36.5 C. (97.7 F.) and the pulse rate was 75.

The red blood cell count was 4,460,000; the hemoglobin level was 89 per cent, and the white blood cell count was 5,800. The Schilling differential count was as follows: stab cells 2, segmented forms 51, lymphocytes 42 and monocytes 5. The Kahn reaction of the blood was negative. The icterus index was 55. The prothrombin time was 35 seconds. The stool showed no bile. There was a large amount of bile in the urine. The patient was treated with dextrose given intravenously in large amounts and vitamin K and bile salts by mouth. The icterus index gradually fell to 17.5, and the prothrombin time was somewhat shortened. February 22 operation was performed with the expectation that a stone in the common duct would be found. Inspection and palpation of the duodenum revealed definite evidence of a duodenal ulcer just beyond the pylorus. The gallbladder was not the site of acute inflammation and no stones could be felt in it or in the common duct. The liver appeared entirely normal except that it was unusually firm. The common duct was so small that it was not explored, but instead an opening in the cystic duct was made and the common duct explored through it. The gallbladder was removed in the usual manner. After removal it was found to exhibit no abnormalities and to contain no stones. After the operation the patient was questioned about the ingestion of drugs which might have resulted in the toxic hepatitis. The only medicament that she had been taking was a preparation called guaiasin furnished by the S. E. Massengill Manufacturing Company. She was uncertain about how many of the guaiasin capsules she had taken. The medicament had been taken on the advice of a drug "detail man" to relieve colds. She had taken four or five capsules about January 1. Her jaundice did not appear until about February 1. The description of the drug on the label was "Guaiasin is the Guaiacol Ester of Phenyl-Cinchoninic Acid, a chemical combination of Cinchophen and Guaiacol." It was stated on the label that "Special caution is necessary in the presence of renal insuffi-

ciency and impaired hepatic function." Each yellow and black capsule contained 5 grains (0.3 Gm.) of the compound. The recommended dose was "1 or 2 capsules two or three times daily after meals with plenty of water, or as determined by the physician."

February 28 a galactose tolerance test gave 2.1 Gm. excretion, which was interpreted as indicating moderate impairment of liver function. March 1 the hippuric acid test of liver function gave 1.3 Gm. excretion of conjugated benzoic acid, which was interpreted as definite evidence of liver damage, the normal minimum being 3 to 3.5 Gm. The patient's jaundice remained throughout her hospital stay, the icterus index remaining at a level of about 20. She was given 1,000 cc. of a 10 per cent solution of dextrose intravenously twice daily. A careful study of the blood revealed no hematologic disorder. The patient was discharged from the hospital March 5 to continue treatment at home. She was still jaundiced and suffering from severe anorexia. The diagnosis was toxic hepatitis probably due to cinchophen.

CASE 2.—March 3, 1939, we saw the patient's 10 year old son at the request of his father. The boy was deeply jaundiced and his liver was greatly enlarged, extending 2½ inches (6 cm.) below the costal margin. He was active and did not feel ill. Approximately five months previously he had begun receiving guaiasin capsules for colds. The usual dose had been three capsules given over a period of twenty-four to forty-eight hours. The medication was repeated at intervals of weeks whenever he seemed to be getting a slight cold. There had been an interval of several weeks before his last ingestion of the capsules on or about March 1, when he had one and one-half capsules. He had received a total of from fifteen to eighteen capsules in the previous five months. The jaundice appeared March 2. Since the boy's father was a physician, the situation was fully explained and it was advised that the boy be taken home, watched carefully, and given a very high carbohydrate diet. After his return home he felt so well that he was allowed to go to school until March 8, when his father discovered him unconscious in his bed. March 9 he was brought to the St. Louis Children's Hospital. He was deeply icteric and comatose. The liver was no longer palpable. By percussion it seemed to be very small, tympany extending high above the costal margin. The decrease in the size of the liver as compared to the greatly enlarged liver that was noted only six days previously was extreme and dramatic.

The icterus index was 170. The blood sugar value was 38 mg. per hundred cubic centimeters. Other blood chemistry studies were within normal limits. On examination the spinal fluid was normal. The boy did not regain consciousness. He was treated with constant intravenous infusions of dextrose and lactate-Ringer's solution and was given feedings through a stomach tube. He died March 12.

Postmortem examination revealed acute yellow atrophy of the liver. There were extreme ascites, bilateral hydrothorax and hydropericardium. The liver weighed 460 Gm. as compared with the normal weight for the patient's age of 850 Gm.

The amounts of the drug taken in these two cases were very small. Each of these patients, however, had received repeated small doses at intervals of some weeks over a period of approximately five months. No doubt seems possible concerning the cause of the liver damage in both instances. In these cases, as in many others which have been reported, there was nothing to suggest a special idiosyncrasy to the drug. Neither patient had exhibited at any time any allergic type of cutaneous response. In the mother's case allergy could be ruled out since the symptoms did not appear until weeks after the last dose. In the boy's case an allergic explanation is unlikely, since he had repeatedly taken small doses of the drug without symptoms.

Barbour and Fisk⁷ believe that under certain conditions liver damage is a constant and inevitable result of cinchophen administration. Repeated administration after an interval would seem to be one of the conditions, as noted by Sugg⁶ and Palmer and his co-workers⁸

and in the cases reported here. The appearance of acute toxic necrosis of the liver, such as was found in the boy's case, has been repeatedly described, and, as in his case, the clinical picture of portal obstruction with ascites may be present as described by Beaver and Robertson.¹⁰

It is important to note that in the mother's case, although no previous symptoms had been experienced suggesting peptic ulcer and gastrointestinal roentgenograms taken a few months previously had shown no lesion, a peptic ulcer was found at operation. Bollman, Stalker and Mann¹¹ found that feeding cinchophen will produce chronic peptic ulcer in nearly all dogs, usually single and on the posterior wall of the pyloric region. Simonds¹² found that typical and severe gastritis occurs in dogs within twenty-four hours after the initial cinchophen feeding. Following the development of the gastritis, peptic ulcers appear. It may be that the ulcer as well as the toxic hepatitis in this case was caused by the ingestion of cinchophen.

In the mother's case, as has been previously noted in many instances, the initial inquiry failed to reveal the history of cinchophen medication. Patients are frequently unaware of the nature of the medicament they have obtained from physicians or purchased at drug stores for use as mild analgesics or in the treatment of colds. In many cases, therefore, the history of chronic pain or frequent upper respiratory infections with drug treatment of unknown nature may indicate the probability of cinchophen medication.

Warnings not to take cinchophen when known liver damage exists are useless. Cinchophen seems to be highly toxic to many persons for whom there is no reason to suspect any hepatic impairment. Likewise patients and physicians are usually unaware whether or not in any individual patient there has been any liver damage. The question of why more patients do not give clinical evidence of liver injury after the administration of cinchophen and its derivatives has been repeatedly raised. Apparently the best explanation is that certain patients are more susceptible than others but that large doses or repeated doses of cinchophen given at intervals probably always cause some liver damage. Because of the extremely great reserve powers of the liver, mild and moderate degrees of liver damage are probably seldom recognized clinically. It is only when an extremely large percentage of the liver parenchyma is incapacitated that the toxic signs become evident.

SUMMARY

In two cases severe liver damage followed medication with a compound of guaiacol and cinchophen, in one of them resulting in fatal acute yellow atrophy. It has not yet been determined whether this particular cinchophen compound is more toxic than cinchophen itself. A duodenal ulcer, possibly produced by the cinchophen, was found at operation in one case. I was unable to find any previous reports of ulcers caused by cinchophen in the human being, although peptic ulcers have been so produced in experimental animals. Cinchophen medication is dangerous. The use of this drug is inadvisable, especially in the treatment of such relatively innocuous conditions as the common cold.

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EXPERIENCE WITH COBRA VENOM IN THE ARTHRALGIAS AND RELATED CONDITIONS

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Pain is the most common complaint in arthritis, neuralgia and related conditions. These ailments at times may be dominated by discomfort so intractable as to subordinate all other considerations until symptomatic relief is provided for the patient. Failure or delay of the clinical measures in giving adequate comfort in such situations presents a not infrequent and difficult therapeutic problem.

The relief of pain in arthralgia and neuralgia for these reasons has been the subject of investigation in our clinic for several years. The current interest in the use of venoms for relief of pain, particularly in rheumatic disease, leads us to publish this preliminary report on our therapeutic experience with cobra toxin. Our studies are continuing and will in time cover the treatment of a larger group of patients than are represented here. Among other remedies, we have observed the effects of copperhead and rattlesnake extracts. These substances were in the early stages of development at that time and we found that they had received insufficient experimental study to warrant further clinical use.

The report of Macht¹ on the use of cobra venom in a variety of painful conditions which included favorable results in two cases of tic douloureux, ten of other neuralgias and "ten cases of chronic arthritis who could not be relieved except by narcotics" led us to add to our studies the effects of that substance in painful rheumatic and related disease. In the group mentioned by Macht, the types of arthritis and neuritis were not indicated. As far as we know, only a few other publications on the clinical use of snake venom in arthritis have appeared at this writing. Ferri² briefly reported uniformly satisfactory results in one case of "chronic arthritis" and in three cases of sciatica treated with from one to three injections of viper extract. While administering cobra and viper venom to subjects suffering from painful carcinomas of the breast, Körbler³ noticed an "appreciable relief" of pain in the osteo-arthritic hip of one patient.

The most extensive experience with snake venom in rheumatic disease was summarized by Burkardt,⁴ who employed viper extract intracutaneously for sixty-four patients receiving a total of 1,682 treatments. Of seventeen patients with neuralgia—sciatic, intercostal, cervical, occipital and trigeminal—almost all experienced considerable or complete alleviation "in a short period

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Dr. I. Jerome Silverman, clinical pathologist to the outpatient department, cooperated with the authors in the laboratory work required. The cobra venom for this study was made available by Dr. D. I. Macht and was supplied by Hyenson, Westcott & Dunning, Inc., Baltimore.

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3. Körbler, J.: Erfahrungen bei Krebskranken durch Schlange gift, *Klin. Wchnsch.* 11: 1159 (July) 1935.

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of treatment." Among those with chronic rheumatoid arthritis ("primary chronic arthropathy") "three fourths of them showed constitutional improvement as well as in the joints locally, with decreased swelling and pain—and with an essential reduction of the erythrocyte sedimentation rate." Several patients suffering attacks of acute inflammatory arthritis were freed from pain by three or four injections.

In a number of cases of "secondary chronic arthritis," he noted, the results were too insignificant and the number of cases too few for any conclusions. Retrogression of joint swelling and significant relief of pain were striking in specific infectious arthritis, gonorrheal and tuberculous. In four cases of spondylitis of the Bechterew type (Marie-Strümpell disease), increased mobility and relief of pain were derived. In addition, three of these showed a lowered sedimentation rate. No detailed analysis as to the severity of the various conditions or as to the degree of response was offered by the author.

Snake venoms have been put to a number of empirical uses for some time, but the cobra substance has been employed so far chiefly for the relief of pain in malignant conditions⁵ and to a lesser extent for the control of discomfort in tabetic crises,⁶ in angina pectoris⁷ and in the Parkinson syndrome.⁸ Macht's⁹ studies of the physiologic and pharmacologic effects of cobra toxin in animals and in man have contributed in great part the experimental basis for its clinical use. He has also developed a practical technic of preparation and biologic assay of the therapeutic material which is extracted from the dried scales of the Indian or African cobra.

The quantity of cobra toxin solution required to kill a mouse weighing 24 Gm. within eighteen hours after intraperitoneal injection constitutes a mouse unit. Such a highly diluted preparation has very slight toxic action in human beings. Five mouse units has been adopted as the standard average intramuscular dose, but much larger quantities have been administered by us and by others without harmful results. Macht¹⁰ has shown that cobra venom does not act as a local anesthetic and does not appear to affect the nerve fibers or nerve trunks in animals when applied locally. Cobra venom injected into animals in his pharmacologic studies acted antagonistically to certain drugs producing cerebral convulsions. As a result of his investigations Macht¹¹ concluded that cobra venom relieves pain in much the same way as morphine, by an effect on the cerebrum, without exerting similar narcotic effects.

METHOD

Patients with painful conditions attending the Arthritis Clinic at Bellevue Hospital, Fourth Division, were selected for our study. Almost all the patients had already failed to obtain adequate relief from other therapy, such as antirheumatic drugs, sedatives, local applications, physical therapy and in a few cases even

codeine. Some were placed on cobra venom therapy at once. Others were given a course of physiologic solution of sodium chloride to make a control group available. The treatment of some of the patients receiving cobra venom and showing improvement was interrupted, without their knowledge, and physiologic solution of sodium chloride was substituted to determine the veracity of the previous response. The estimate of the severity of the patient's condition and the degree of improvement, if any, was made by the same observers throughout this study, according to table 1.

The cobra extract was administered at first, as recommended by Macht,¹ in 1 cc. or 5 mouse unit doses intramuscularly given daily or every second day at the start of treatment. It soon became apparent that this amount of drug in arthritic conditions was too mild to produce the rapid or satisfactory analgesia reported by others.¹² The dose was therefore increased to 2 cc., or 10 mouse units, following an initial injection of 1 cc. to ascertain tolerance. It was agreed, from the experience of Macht and others, that ten injections, or 50 mouse units, were to be considered the minimum standard trial series for eliciting any notable clinical effect. Failure to provide some comfort with that amount of material was to be charted as a negative result. In all cases in which there was no relief, in

TABLE 1.—Criteria

	Severity	Results	
1+	Diffuse pain; no tenderness	Relief of pain and disability, subjective.....	1+
2+	Diffuse pain; overlying tenderness	Same with relief of insomnia	2+
3+	Localized pain and tenderness; limited mobility	Subjective relief and reduced tenderness and disability....	3+
4+	Localized pain and tenderness; insomnia; narcotics; disability	Same with complete subjective and objective relief.....	4+

fact, we did administer much more venom to make sure that both the medication and the patient had been permitted a fair opportunity.

The treatments were given, whenever possible, daily for from five to ten days. The first injection always consisted of 1 cc. (5 mouse units) intramuscularly, after which from 5 to 10 mouse units in 1 or 2 cc. became the steady dose, according to the severity or responsiveness of the condition. When the subjective and/or objective improvement persisted during a period of three or four injections the dose was reduced or the interval between injections was gradually lengthened, so that the patients received treatments three times or twice a week and, finally, once a week. After from two to three weeks of steady complete relief, the venom was discontinued. The sites of injection were alternated regularly between the deltoid areas and the upper, outer gluteal quadrants. To avoid any disturbing mental suggestion, the cobra venom was always designated or discussed as preparation no. 77 for the 5 mouse unit ampules and as no. 78 for the specially prepared 10 unit ampules. The saline solution was called N. S. When a patient had taken oral medication regularly, possible contrary effects from the sudden interruption of a therapeutic ritual were avoided by prescribing a simple syrup in the usual dose in addition to the intramuscular inoculations.

When patients were given saline solution and the symptoms went unrelieved for from two to three weeks, venom was substituted. In some of those first treated

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11. Macht, D. I.: Comparison of Cobra Venom and Morphine as Analgesics, Am. J. Physiol. 116:101 (June) 1936.

12. Macht,¹ Ferri,² Körbler,³

with venom, as we have stated, the cobra material was later replaced with saline solution. A small number received only either venom or saline solution.

RESULTS

In order to determine as accurately as possible the effectiveness of the cobra material, the symptoms and signs before treatment and the response to therapy as reported by the patient and as evidenced by examination were graded according to table 1.

Nine patients with rheumatoid arthritis received control therapy with injections of saline solution. None of these patients were benefited. Thirteen of the fourteen patients with rheumatoid arthritis were given venom with slight to moderate improvement in eleven. Four of these patients showed marked symptomatic relief. Two of the group with rheumatoid arthritis were not helped by a total of from 90 to 150 mouse units. Both of these patients suffered from Marie-Strümpell disease, and we have included them among those with rheumatoid disease. A third patient with this ailment reported slight comfort resulting from 195 mouse units. The relief of complaints with the cobra extract was surprisingly more impressive in the group

TABLE 2.—Summary of Results

Classification	Saline Solution			Venom			Total Patients
	No. of Patients	Slight to Moderate Improvement	Unimproved	No. of Patients	Slight to Moderate Improvement	Unimproved	
Osteo-arthritis.....	17	4	13	23	17	6	24
Rheumatoid arthritis..	9	0	9	13	11	2	14
Fibrositis.....	5	1	4	13	2	11	14
Neuralgia.....	5	2	3	12	6	6	13
Totals.....	36	7	29	61	36	25	65
Percentage.....		19.4	80.6		59.01	40.9	

with rheumatoid arthritis than in the group with other conditions reported here.

Of twenty-four patients with osteo-arthritis, seventeen were given a course of saline solution intramuscularly with slight to moderate relief claimed in four cases but without response in thirteen. Twenty-three patients in the osteo-arthritic group were subjected to cobra therapy with slight to moderate benefit in seventeen but with no effect in six others. The osteo-arthritic patients who received venom, therefore, showed a much higher frequency of symptomatic improvement than did those given saline solution.

Of fifteen patients with fibrositis, five received injections of saline solution. The complaints of four of these patients were unchanged, but the fifth reported slight relief. Cobra venom was administered to thirteen fibrositic subjects with slight to moderate improvement in only two, the other eleven apparently remaining unimproved. The results from the use of cobra venom in fibrositis were distinctly poor by comparison with the small control group receiving saline solution. It must be remembered, however, that "fibrositis" at the present time, as a diagnostic classification, embraces a heterogeneous group of complaints referred to the soft tissues, often probably arising from a psychic rather than a pathologic basis. Failure of the reptile extract in several of these cases in which there were elevated sedimentation rates and signs of definite organic involvement, however, suggests so far a real ineffectiveness in these

diffuse pains compared to the results in the sharply localized discomfort of arthritis.

Of thirteen patients with neuralgia five received saline solution, with slight to moderate improvement in two but with no effect in three. Twelve patients in this group were given the cobra injections, from ten to thirty doses, with slight to moderate comfort in six but with no relief in the other six. The comparative value of the venom in this small group is equivocal. Unfortunately, all but two of these patients presented neuralgic syndromes of long standing. The condition of two of the patients was acute and the anodynal action of the venom appeared definite in one of these after thirteen injections but only slight, if at all, in the other after eighteen treatments. The first patient's pain for three weeks previously had not been eased by from 80 to 100 grains (5 to 6.5 Gm.) of antirheumatic medication and 2 grains (0.13 Gm.) of codeine daily. The second patient required three weeks of almost daily treatment before slight relief occurred.

While the group of sixty-five patients treated is a sizable one as a whole, we realize that each of the individual syndromes was represented by a limited number of cases. As a preliminary study, however, we feel that enough patients were treated and followed to justify our reporting these observations to assist in further investigation elsewhere. Of the total number of sixty-five subjects (table 2), thirty-four were given control courses of saline solution. Seven, or 19.4 per cent, of the latter patients reported or demonstrated slight to moderate improvement, while twenty-nine, or 80.6 per cent, were not helped. On the other hand, of sixty patients to whom venom was administered, there were thirty-six, or 59.01 per cent, who showed slight to great symptomatic relief, while twenty-five, or 40.9 per cent, of these patients were unaffected. The benefit from venom therapy appeared to be three times as frequent as that elicited from injection of saline solution. There were three patients whose pain and disability were said by them to have disappeared entirely while receiving cobra toxin. About one third of those benefited by this substance were only slightly helped, usually subjectively, the others experiencing moderate improvement.

REACTION AND RESPONSE

The venom, like the saline solution, was injected intramuscularly. Often there occurred a slight local soreness where the cobra material was deposited, lasting for several hours, accompanied occasionally by swelling, which now and then persisted for a few days. The local discomfort was only rarely severe enough to require the application of heat and counterirritants. In most of our cases the 2 cc., 10 mouse unit, dose was administered with practically little more local reaction than half that amount provoked. In three cases, for investigative as well as for anodynal purposes, as much as 3 cc. was injected daily or every second day. In one of these cases developed what was evidently a chemical abscess requiring incision and drainage and yielding a negative bacteriologic culture. We are avoiding, therefore, any greater single intramuscular dose than 2 cc. or 10 mouse units.

There were no definitely adverse systemic reactions observed by us following cobra venom. Some patients were purposely maintained for as long as three or four months on regular injections of the medication without untoward effect or evidence of cumulative action. One

woman complained of nausea occurring regularly after the injection of venom, but she was not sufficiently troubled by this alleged effect to wish to discontinue the medication. Another patient reported a violent stomach upset with vomiting after each of three injections of the cobra extract. Unknown to her, saline solution was substituted, and a similar complaint was made after each of two such injections.

Several patients with multiple joint or muscle symptoms reported relief at some sites following injections of venom, yet failure of the remaining involved areas to respond. An example of this type of reaction was a case of combined arthritis, the symptoms consisting chiefly of pain and limited mobility of the shoulders, arms and fingers. After the first course of ten doses the complaints had disappeared excepting in the right fourth finger, which was swollen and showed destructive changes in the digital joints with the usual spindle-shaped deformity of chronic, active, advanced rheumatoid arthritis. The patient remained free of her discomfort everywhere excepting in that finger throughout three courses totaling thirty injections.

Several of the arthritic patients with associated hypertensive, cardiac or diabetic states had no apparent exacerbation of these complications from the venom therapy. Many of the patients in our series had repeated urinalyses done during the period of venom treatment without abnormalities being detected. The erythrocyte count and hemoglobin content did not present any definite changes. Of four patients who had complete blood counts performed within a few hours after they received injections of cobra extract, one showed moderate leukocytosis (12,500 white blood cells). The nonfilament count and the sedimentation rate were uninfluenced by treatment even when symptomatic benefit occurred. In several cases showing an elevated sedimentation time when venom treatment was begun there was no appreciable change in this disease index after long courses of injections. When the sedimentation rate was normal, the test was not repeated as a routine, but in a number of such situations when the rate was checked during or at the end of therapy the sedimentation time remained at about the same low level. Some of these results are listed in table 3.

A few patients suffered exacerbations of pain although they were in the midst of a course of cobra therapy at the time. The good effects of the snake extract were in no instance apparent before at least five injections had been administered, and usually from eight to ten treatments of the 10 unit dose were required for any benefit to be admitted or noticed. In the dosage used, twice the amount so far recommended, the material evidently cannot be substituted for the predictable, rapid analgesia of a narcotic, nor does the toxin seem to act uniformly as to degree and time in cases presenting approximately similar involvement.

The benefit recorded by us refers almost in every instance to subjective relief. In a small number of cases stiffness and limited mobility were found to be improved along with discomfort as the patients reported. It is interesting to note that a number of the patients who benefited from venom had their treatment interrupted. Injections of saline solution were substituted without their knowledge, only to be followed shortly by a definite recurrence of previously improved symptoms. Only a small number of patients with swollen joints presented themselves during the period covered here.

There was no noticeable effect of injection of the cobra material on their articular enlargement, even when the pain was said to have been relieved. Three patients with neuralgia who failed to respond to venom were moderately or completely relieved by procaine block. When the injections of venom were discontinued, in all but a few instances there followed a recurrence of symptoms within a short period.

SUMMARY AND CONCLUSIONS

1. Of a group of sixty-five patients, thirty-six received injections of saline solution from two to five times a week; sixty-one were treated with cobra venom intramuscularly at similar intervals; of those given

TABLE 3.—Some Blood Counts and Erythrocyte Sedimentation Rates Before and After Injection of Cobra Venom

Case	Dates	Total White Blood Cells	Non- filament Count	Red Blood Cells	Hemo- globin, %	Sedimen- tation Rate (Cutler)	Number of Injec- tions
1	1/20/39	8,300	18	5,100,000	77	9	
	3/11/39	9,350	37	6,000,000	80	12	16
2	3/30/39	8,100	16	4,350,000	77	16	
	6/10/39	8,500	28	4,600,000	73	23	30
3	2/28/39	8,100	..	4,000,000	85	7	
	4/ 1/39	6,800					
	5/ 6/39	8,800	23	5,900,000	75	9	21
4	5/15/39	6,700	18	4,250,000	75	9	
	6/10/39	9,000	24	5,000,000	81	8	13
5	2/19/39	8,300	26	4,400,000	92	9	
	5/12/39	9,600	36	4,200,000	71	14	22
6	6/10/39	5,050	20	4,100,000	96	10	
	7/22/39	5,450	26	4,500,000	84	10	16
7	7/ 8/39	8,300	18	4,700,000	84	8	
	7/29/39	5,750	23	4,600,000	81	8	12
8	7/ 8/39	11,300	37	5,400,000	82	9	
	7/22/39	7,100	44	5,000,000	84	12	12
9	2/18/39	5,000	43	4,300,000	93	6	
	6/24/39	6,400	23	4,500,000	80	4	44
10	2/21/39	7,500	22	4,300,000	73	14	
	6/10/39	5,200	28	4,400,000	80	..	40
11	6/ 7/39	6,100	18	.....	..	7	
	7/18/39	6,300	28	4,500,000	88	8	20
12	2/28/39	9,400	..	.....	..	27	
	4/ 1/39	12,100	..	.....	..	27	23
13	3/ 9/39	.....	..	4,010,000	69	29	
	4/29/39	.....	..	.....	..	31	
	6/13/39	.....	..	4,600,000	80	22	23
14	2/ 7/39	.....	..	4,250,000	75	23	
	4/ 3/39	.....	..	4,500,000	68	25	18
15	2/12/39	.....	..	.....	..	15	
	3/14/39	.....	..	.....	..	16	22

saline solution, seven (19.4 per cent) showed slight to moderate symptomatic relief, but the condition of twenty-nine (80.6 per cent) failed to respond; of the group receiving venom, thirty-six (59.01 per cent) were slightly to moderately benefited while the condition of twenty-four (40.9 per cent) was uninfluenced.

2. In the separate types of rheumatic disease treated in this series, of fourteen patients with rheumatoid arthritis, nine received control therapy of saline solution without relief in any, whereas of thirteen getting cobra injections eleven appeared to have slight to moderate improvement. Three of these patients suffered from Marie-Strümpell disease and in two instances were not benefited by venom, while the third patient reported slight relief of discomfort. Of twenty-four patients with osteo-arthritis, seventeen were given saline solution with slight to moderate benefit in four and without effect in thirteen. Of twenty-three patients with osteo-arthritis to whom venom was administered,

seventeen derived slight to moderate improvement and six no relief. Of fourteen patients with fibrositis, five were subjected to control therapy of saline solution with slight benefit in one and in four without effect. Among thirteen patients with fibrositis injected with venom, only two felt slight to moderate improvement, while eleven reported that the symptoms were unchanged. There were thirteen patients with neuralgia, of whom five received saline solution, two of them showing slight to moderate relief and three no benefit. Twelve patients with neuralgic syndromes were given venom, six of these reporting no effect and the remaining six slight to moderate improvement.

3. In this preliminary study a small but suggestive group, particularly those with arthralgias, experienced some gradual but rarely complete relief of pain, and in a lesser number of cases improved mobility, during administration of cobra venom. Careful evaluation at this time indicates, on the whole, some limited effectiveness of cobra toxin as compared with controls treated with saline solution. As an added comforting measure, to tide patients over an intractable period of treatment in acute or chronic arthralgia or neuralgia, cobra venom in certain cases appears to offer some supplementary analgesic effect. Accurate determination of such therapeutic value requires further controlled investigation in a large series of the various rheumatic conditions.

35 East Ninth Street.

PREVENTING TRAUMATIC COMPLICATIONS IN CONVULSIVE SHOCK THERAPY BY CURARE

A. E. BENNETT, M.D.

OMAHA

Convulsive shock therapy has been very enthusiastically endorsed by many workers and critically condemned by others. Its exact status as a permanent therapeutic agent in neuropsychiatry is yet to be determined. The follow-up studies after convulsive shock treatment of schizophrenic reaction types are not very encouraging, since relapses are frequent. Hypoglycemic shock therapy seems preferable. However, in chronic affective disorders of both the depressive and the manic types, the favorable sustained improvements from convulsive shock are more encouraging.¹ Midlife and presenile depressive states are terminated in the large majority of cases by convulsive therapy.² The cases of schizophrenia that respond best to this type of treatment are likewise admixture types with affective components.

For convulsive shock most workers use a convulsant dose of metrazol (pentamethylenetetrazol). Other convulsant drugs in use are triazol,³ picrotoxin⁴ and

coriamyrtin.⁵ Preliminary reports⁶ indicate that all these methods are therapeutically effective.

One of the serious drawbacks to this therapy has been the occurrence of traumatic complications in the form of fractures of the spine and extremities.⁷ This hazard is sufficiently serious, in spite of excellent obtainable results, that many workers have given up convulsive shock therapy. Insulin shock also carries this risk, but in lesser degree than other convulsant drugs.

Up to date, none of the measures advocated for prevention of fracture complications can be accepted as universally prophylactic. Various orthopedic restraint devices, hyperextension of the spine, preliminary insulin coma and even spinal anesthesia along with metrazol⁸ give no constant assurance that fractures can be prevented. Preexisting pathologic conditions of the bone may explain the tendency to fracture in some instances, but the fundamental problem still remains; namely, the severity of the tonic muscular contraction producing skeletal fracture by direct muscle pull.

If shock treatment is to survive, the incidence of fracture complications must be reduced to a minimum. Since the fundamental cause of fracture complications is the severity of the muscular contractions occurring from the convulsive attack, the proper theoretical approach in prevention should be toward lessening the severity of the convulsion. The principle of curarization, or blocking the neuromuscular junction, seems to be the proper approach.

Since the time of Claude Bernard, curare (Indian arrow-poison) has been the ideal laboratory drug for blocking nerve impulses between the nerve fiber and the muscle. This peripheral motor paralysis in general affects nerve endings of all striated musculature. While systems other than the neuromuscular apparatus are undoubtedly affected to some extent, the chief action resulting in death is one of peripheral paralysis of the muscles of respiration. Cardiac muscle is relatively little affected until after asphyxia.

Curare has not as yet gained a definitely useful application in clinical medicine. Attempts from time to time have been made to apply the curarization principle in treatment of spasmodic disorders. West⁹ reported partial success in tetanus. The most encouraging report is that of Burman¹⁰ in infantile cerebral palsies, spastic pyramidal states and extrapyramidal rigidity states which are associated with involuntary movements, athetosis and tremor.

For the past six months I have been using curare at the Nebraska State Orthopedic Hospital on a large number of spastic paralytic children, with encouraging results similar to those reported by Burman. These observations, after convincing me of the safety of the

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2. Bennett, A. E.: Metrazol Convulsive Shock Therapy in Affective Psychoses: A Follow-Up Report of Results Obtained in Sixty-One Depressive and Nine Manic Cases, *Am. J. M. Sc.* 198:695 (Nov.) 1939.

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7. Palatin, Philip; Freedman, M. M., and Harrie, M. M.: Vertebral Fractures Produced by Metrazol Induced Convulsions, *J. A. M. A.* 112:1684-1687 (April 29) 1939. Bennett, B. T., and Fitzpatrick, C. P.: Fractures of the Spine Complicating Metrazol Therapy, *J. A. M. A.* 112:2240-2244 (June 3) 1939. Hamsa and Bennett.⁸

8. Hamsa, W. R., and Bennett, A. E.: Traumatic Complications of Convulsive Shock Therapy: A Method of Preventing Fractures of the Spine and Lower Extremities, *J. A. M. A.* 112:2244-2246 (June 3) 1939.

9. West, Ranyard: Intravenous Curarine in Treatment of Tetanus, *Lancet* 1:12-16 (Jan. 4) 1936; *The Pharmacology and Therapeutics of Curare and Its Constituents*, *Proc. Roy. Soc. Med.* 28:565-573 (1935).

10. Burman, M. S.: Therapeutic Use of Curare and Ergonovine Hydrochloride for Spastic and Dystonic States, *Arch. Neurol. & Psychiat.* 41:307-327 (Feb.) 1939.

drug, have pointed the way to its application in convulsive shock therapy of mental disorders.¹¹

One of the reasons, I believe, for previous inconclusive clinical application of the drug has been inability to obtain a sufficient quantity of proved pure crude curare (authenticated curare).¹² Through the courtesy of Mr. Richard C. Gill, of New York, and E. R. Squibb & Sons, we were given the opportunity of standardizing a large quantity of the crude drug for experimental purposes.

THE TECHNIC OF CURARIZATION PRELIMINARY TO CONVULSIVE SHOCK THERAPY

Either an infusion or an alcoholic extract from crude curare is prepared and the smallest lethal dose (per kilogram) for mice is determined. The lethal dose (different with each batch) is then determined; about one-tenth the lethal dose (per kilogram) is the beginning dose for human beings. The drug must be sterilized¹³ and slowly injected intravenously or given intramuscularly. The active physiologic reaction of curarization is noted at about one-fourth to one-half the estimated lethal dosage.

When the physiologic dosage is reached, the physiologic effects noted immediately after intravenous injection and fifteen minutes after intramuscular injection are as follows: First, there is a subjective heaviness of the eyelids, then bilateral ptosis, slight nystagmus and strabismus with diplopia. Weakness of the muscles of the neck with inability to raise the head, loss of facial expression from weakness of the muscles, slow hesitant speech, weakness of the throat and jaw muscles rapidly follow. Next occur weakness to complete paresis of the spinal muscles, preventing the patient from raising himself, and, last, complete paresis of the arms and legs. These symptoms follow the same order as the progressive symptoms of a patient with myasthenia

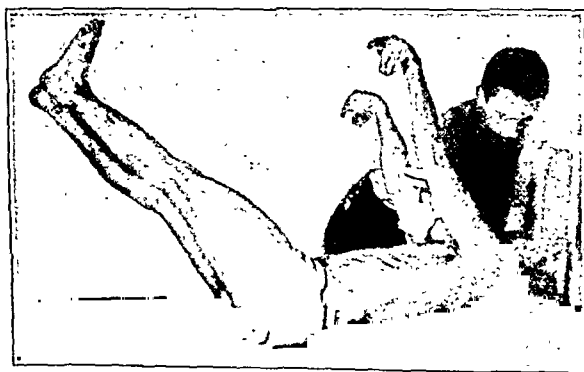


Fig. 1.—The patient in a straight metrazol convulsion.

gravis. Double ptosis and nasal smile simulate the appearance of the myasthenic patient.

When, within five minutes after the intravenous injection of curare, this effect is produced, the estimated convulsant dose of metrazol is given. I still hyperextend the patient's back by placing between the scapulas a firm folded blanket fastened on a pillow. Care

must be used not to allow the patient's head to fall backward, as his neck muscles are powerless. The usual metrazol convulsion ensues immediately, but with very much less tonic and clonic contraction—no special precaution except tongue gag need be used.

By the time the patient regains consciousness the effects of curare have disappeared. Although patients are not able to thrash about after administration of metrazol, they should be watched carefully.

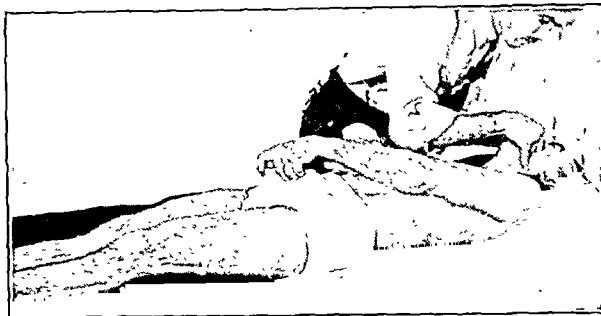


Fig. 2.—Same patient as shown in figure 1 after curarization followed by metrazol, illustrating the remarkable diminution of muscular contraction.

While we have not seen any side effects from the combination of the drugs except for a few instances of transient urticaria, nor any respiratory embarrassment, these should be watched for. Ampules of epinephrine and prostigmine should be available for injection as an antidote. If respiratory failure should occur, artificial respiration should be effective, since the excretion of the drug is rapid and the patient will spontaneously regain breathing power within a short time. It is doubtful whether respiratory failure need be feared unless too large a dose of curare is employed. The criterion to be followed is sufficient curare to paralyze the muscles of the neck and back. When the patient is unable to raise the head, sufficient motor paresis has been produced for metrazol to be given.

I have not noted any tendency to increased tolerance of curare on repeated injections. Neither am I sure that larger doses of metrazol are necessary to induce a convulsion after curarization. It may be wise to use a slightly larger dose of metrazol, however.

I have noted the same therapeutic effectiveness in depressive states by this combined method as from previous metrazol treatment. Curare in no way interferes with the therapeutic effect of metrazol. It may possibly allay somewhat the anxiety of the patient. So far, I have found that patients do not dread this convulsive shock as much as that from metrazol alone.

Figure 1 shows a patient in a straight metrazol convulsion. Figure 2 shows the same patient after curarization followed by metrazol, illustrating the remarkable diminution of muscular contraction.

I am convinced that fracture complications resulting from a metrazol convulsion in a properly curarized patient are almost impossible unless there is a serious pathologic condition of the bone.

CONCLUSIONS

Aqueous or alcoholic extract of curare given parentally in physiologic dosage sufficient to produce flaccid generalized motor paresis adequately protects the patient from traumatic complications of convulsive shock therapy.

11. These results, with more extended observation on combined curare and metrazol therapy, will be reported elsewhere.

12. Gill, R. C.: Curare, *The Flying Death*, Natural History, November 1935, pp. 279-292.

13. Dr. A. R. McIntyre, professor of pharmacology at the University of Nebraska College of Medicine, is now carrying out biologic standardization experiments, and a safe commercial preparation should soon be available.

So far, no danger or drawback to this combination treatment has been encountered. The therapeutic effectiveness of convulsive shock is still maintained.

Further experimentation is indicated before this procedure can be safely recommended for general psychiatric practice. More detailed experiences with this method will be reported elsewhere.

1204 Medical Arts Building.

Clinical Notes, Suggestions and New Instruments

SEVERE CARBON MONOXIDE POISONING WITH PROLONGED COMA

FOLLOWED BY TRANSITORY PSYCHOSIS, PERIPHERAL POLY-
NEURITIS AND RECOVERY

EUGENE B. SANGER, M.D., BANGOR, MAINE

AND

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Carbon monoxide poisoning of mild degree is usually followed by an uneventful recovery, but severe poisoning by this gas, when it results in profound and prolonged coma, often terminates fatally. There sometimes result severe disturbances of the sensorium, often of long duration, and in such cases there is often some impairment of motor function, from which recovery is generally much less rapid and less complete than from the purely mental symptoms. The case of carbon monoxide poisoning reported here is of interest, in view of its initial severity and the serious symptoms that immediately developed, because of the extraordinary degree of recovery that was finally attained. It seemed desirable to have a record of this unusual and comparatively rapid recovery from a condition leading generally to a much less favorable prognosis.

An unmarried professional man aged 27 was found with a companion in a parked automobile on the morning of Feb. 18, 1934. The estimated duration of exposure to carbon monoxide was about six hours, and another three hours elapsed before he was brought to the hospital. The companion was dead when found, which indicated the severity of the exposure to the gas. The windows of the car were closed, the engine had been left running, and later investigation revealed a leak in the gas heater with which the car was equipped.

On his admission to the hospital, physical examination showed the patient to be in profound coma; he was cold and clammy; there was extreme cyanosis of the face and extremities, and the lips were cherry red. The heart tones were of good quality. The lungs showed moist rales, and breathing was greatly labored. The abdomen was distended and tympanitic. There had been a profuse spontaneous diuresis before the patient was moved from the car. The pupils were widely dilated and reacted only slightly to light; corneal reflexes were absent. The only other neurologic feature of import was a bilateral Babinski sign.

Initial laboratory examination showed a white cell count of 55,600 with 17 per cent eosinophils; this was taken two hours after admission. On the following day the white cell count had dropped to 30,000. This was regarded as a favorable indication, as in Dr. Sanger's past cases an increase had meant ultimate death. Five days after the first count the leukocytes had dropped to 10,000 and the eosinophils to 1 per cent. At first the urine showed a few leukocytes and a few red blood cells to the high power field, and there was a trace of albumin. Four days later no abnormalities were observed in the urine. The Wassermann and Kahn reactions of the blood were both negative; the absorption spectrum of the blood was examined on the fifth day, and the absence of carbon monoxide at that time was demonstrated.

Lumbar puncture performed five days after admission showed nothing unusual except a slightly increased initial pressure.

For the first thirty-six hours after his admission to the hospital the patient remained in a profound coma. For the

next thirty-six hours the coma was apparently less profound; the patient began to show some involuntary movements, moving his head and hands aimlessly. At this time he was also able to take fluids orally. On the following day a more noticeable restlessness developed; the patient opened and closed his eyes, snapped his fingers and threshed about in his bed; this behavior continued for nearly two weeks with but little change. Sixteen days after admission the patient rather abruptly regained consciousness and recovered his power of speech. Neuropsychiatric examination at this time showed a marked clouding of the sensorium. Attempts to converse with him elicited only brief, but not entirely pointless, remarks. Asked "What is your name?" he replied "Puttentain," a response suggestive of a childhood game which the patient had known. To other questions relative to his background he gave abusive retorts, as "Who the hell wants to know?" He showed no evidence of recognizing his mother or sister, with whom he had been living at the time of the accident, or other close relatives and friends. Questions relative to his physical condition brought a more adequate response; he complained of pains in legs and feet. During the days immediately following he was overtalkative and showed a marked flight of ideas. He was irritable, profane, obscene, combative, argumentative and extremely uncooperative. He showed an almost complete loss of memory for recent and remote events. He demonstrated some of the components of the parkinsonian syndrome in a marked degree; these consisted of pill rolling, drooling from the mouth and, to a lesser extent, the masklike facies. This condition was evident on the sixteenth day after exposure to carbon monoxide and persisted for over a month, disappearing gradually.

On admission to the hospital the patient was given oxygen and carbon dioxide by mask for thirty-six hours, until the cyanosis had appreciably disappeared; the finger nails still showed evidence of cyanosis three days after admission. Twelve ounces (350 cc.) of physiologic solution of sodium chloride was given by rectum every four hours during the first four days. After he had regained consciousness the patient suffered severe pains in the arms and legs, and was very voluble in his complaints about this condition. The toe drop on the right was noticed on examination of the limbs. The peripheral neuritis responded rather slowly to baking and massage, and except for mild paralysis of the muscles of the right foot, which was aided by a support, the patient made a complete recovery. He became oriented in all spheres, regained memory for remote and recent past events and returned to his normal mental level by the sixtieth day after admission. He was discharged seventy-seven days after admission, but he was unaware of the nature of his illness before this time. On being informed of the circumstances of the accident resulting in his illness he showed a normal concern for his dead companion and for the possible consequences to himself and his relatives.

About a year after the accident the patient was able to resume his professional activities in a limited way; a year after this he had so far recovered that he discharged his full duties without any noticeable impairment.

SUMMARY

A case of severe carbon monoxide poisoning showed the following items of interest:

1. A companion of the patient exposed to carbon monoxide for the same length of time died.
2. The patient remained in varying degrees of coma for twelve days.
3. After the coma the patient demonstrated transitory but marked symptoms of acute psychosis associated with parkinsonism.
4. There was severe peripheral polyneuritis followed by permanent paralysis of the muscles of the right foot.
5. Except for the paralysis of the right foot, the patient made a complete recovery, mentally and physically.
6. Five years after the poisoning the patient was found to be in excellent mental and physical health.

111 State Street, Bangor, Maine—Department of Chemistry and Chemical Engineering, University of Maine.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

ACCEPTANCE OF SUNLAMPS

After extensive investigation and inquiry, in collaboration with physicists and other scientists acting as consultants, and after due consideration¹ of the status of ultraviolet radiation therapy, the Council on Physical Therapy has adopted² and, until a more practical procedure is proposed, will use the erythematous reaction as a basis for judging the effectiveness of ultraviolet lamps for two important reasons: (1) In the case of exposure to intense sources of ultraviolet radiation it is a simple and practical means of preventing severe burns, and (2) in the case of weak sources of ultraviolet radiation it is an efficient safeguard against possible fraudulent sale of lamps that are deficient in ultraviolet radiation.

Physiologic experiments show that for practical purposes the wavelength of maximum erythematogenic action may be taken as the emission line of homogeneous radiation of mercury vapor at 2,967 angstroms, a wavelength present in many sources of ultraviolet radiation.

This emission line has an erythematogenic efficiency which may arbitrarily be placed at 100 per cent relative to the rest of the spectral erythemal response. No other wavelength or group of wavelengths has such a high efficiency in generating an erythema. Hence the emission line of homogeneous radiation at 2,967 angstroms is a natural standard for evaluating sources of heterogeneous ultraviolet radiation.

The intensity and the erythematogenic action of the emission line of mercury at 2,967 angstroms are easily evaluated in absolute units; and the erythematous action, as well as the radiometric output, of the heterogeneous ultraviolet radiation from various sources is readily correlated with this emission line as a standard.³

From direct experiments³ it appears that a fifteen minute exposure to a flux density of 20 microwatts per square centimeter (or a total of 180,000 ergs) of homogeneous radiation of wavelength 2,967 angstroms does not produce an erythema on the average untanned skin, though it may be somewhat too intense for a blond skin.

The Council has adopted 10 microwatts⁴ per square centimeter of homogeneous radiation of wavelength 2,967 angstroms as the erythematous unit (E. U.) of dosage intensity;² that is, 1 E. U. = 10 microwatts per square centimeter of radiation of wavelength 2,967 angstroms. Twice this value (20 microwatts, or 2 E. U.) is the minimum intensity for an exposure of fifteen minutes.

With 20 microwatts per square centimeter (2 E. U.) of homogeneous radiation of wavelength 2,967 angstroms as a standard of comparison, in the accompanying table are given the erythematogenic equivalents of the heterogeneous (the total integrated) ultraviolet radiation of wavelengths shorter than and including 3,132 angstroms required of various sources to produce a minimum perceptible erythema on the average untanned skin in fifteen minutes. For an exposure of sixty minutes the minimum permissible values for sunlamps are one fourth as large. That is to say, the total energy of unit intensity (20 microwatts per square centimeter) falling on a surface in fifteen minutes is the same as when one fourth the intensity (5 microwatts per square centimeter) is used and the surface irradiated sixty minutes, or four times as long. From this table it may be noticed that the lower the erythematogenic efficiency of the source, relative to the standard line at 2,967 angstroms, the greater must be the total ultraviolet intensity

of wavelengths shorter than and including 3,132 angstroms in order to meet the Council's requirements.

The specifications of intensities given in the table are average values, observed in a 0.5 degree zone subtended by the center as the source; i. e., within a circle approximately 4 inches (10 cm.) in diameter, lying in a plane at right angles to the axis of the reflector, at the specified operating distance (24 inches, 61 cm.) from the front edge of the reflector. The specified intensities constitute the minimum values for therapeutic lamps accepted by the Council on Physical Therapy. The minimum intensities in microwatts per square centimeter for accepted sunlamps are one fourth of these values (those indicated by asterisk in the table).

REQUIREMENTS FOR ACCEPTANCE OF SUNLAMPS AND REGULATIONS TO CONTROL ADVERTISING OF SUNLAMPS SOLD TO THE PUBLIC

In considering ultraviolet generators, the Council distinguishes between two general types, sunlamps and therapeutic lamps. The chief difference between the two is that the spec-

Erythematogenic Intensities of Heterogeneous Ultraviolet Radiation from Various Sources Equivalent to 20 Microwatts per Square Centimeter of Homogeneous Radiation of Wavelength 2,967 Angstroms, Required to Produce a Minimum Perceptible Erythema

Source	Microwatts per Square Centimeter
Homogeneous radiation of wavelength 2,967 angstroms only (mercury vapor arc).....	20
Sun: midday, midsummer, midlatitude, sea level.....	91
Carbon arc: blue flame, cored carbon, in reflector, no window.....	48
Carbon arc: glass window, opaque to 2,800 angstroms and shorter (estimated).....	90*
Mercury arc: Mazda, type S-1 lamp; high temperature arc in parallel with V-shaped tungsten filament; in glass bulb.....	83*
Mercury Arc: Mazda, type S-2 lamp; similar to the S-1 lamp, but smaller; in glass bulb.....	93*
Mercury arc: quartz capillary; type S-4; in glass bulb..	80*
Mercury arc: type G-5; low temperature, low voltage thermionic glow discharge; glass bulb.....	108*
Mercury arc: high temperature, high vapor pressure, low voltage; quartz tube.....	58
Mercury arc: high frequency electrodeless discharge; quartz bulb.....	60
Mercury arc: low temperature, low vapor pressure, high voltage, "cold quartz," Geissler tube discharge.....	36

* Lamps marked with an asterisk are acceptable as sunlamps.

tral radiation characteristics of acceptable sunlamps are such that they are suitable for home use without the supervision of a physician, whereas therapeutic lamps have spectral emission characteristics which necessitate professional supervision or control to avoid hazards of overexposure. Therapeutic ultraviolet lamps may be (1) for professional use only or (2) for patient use (prescription models) under the direction of the physician.

To comply with the requirements for quality of radiation, the ultraviolet spectral energy distribution of a sunlamp shall be comparable, in biologic effectiveness, to the ultraviolet emission of natural sunlight (clearest weather, midday, midsummer, midlatitude, sea-level sunlight). The spectral range of wavelengths from sunlamps shall be limited largely from 2,900 to and including 3,132 angstroms and shall not include an appreciable amount of ultraviolet of wavelengths shorter than 2,800 angstroms.⁵

To comply with the requirements for minimum intensity, a sun lamp shall generate sufficient ultraviolet energy to produce a minimum perceptible erythema on the average untanned skin in not more than sixty minutes at a minimum acceptable operating distance of 24 inches. If the ultraviolet intensity is less than this, in the opinion of the Council the radiation is too weak to have any significant prophylactic effect against rickets.

5. More specifically, the energy of wavelengths shorter than and including 2,800 angstroms shall not exceed 1 per cent of the total energy of wavelengths between 2,804 and 3,132 angstroms.

1. Coldentz, W. W.: Ultraviolet Radiation Useful for Therapeutic Purposes, J. A. M. A. 98:1082 (March 26) 1932; 99:125 (July 9) 1932.

2. Acceptance of Sunlamps, J. A. M. A. 102:42 (Jan. 6) 1934.

3. Coldentz, W. W.; Stair, R., and Hogue, J. M.: Tests of a Balanced Thermocouple and Filter Radiometer as a Standard Ultraviolet Dosage Intensity Meter, Bur. Stds., J. Research 8:759, 1932 (R. P. No. 450, 10 cents).

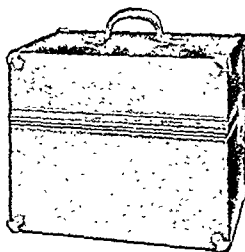
4. In the metric system the numerical value of a unit is 1, 10, and so on. For convenience the Council uses the value 10 to conform with scientific usage instead of the value 20 (i. e., 2×10) noted in the text. The final result is the same.

In accepting sunlamps, the Council requires physical evidence of their production of energy from 2,800 to 3,200 angstroms in wavelength at an intensity which is adequate and safe for use by laymen. It has been demonstrated both clinically and experimentally that adequate ultraviolet energy between 2,800 and 3,200 angstroms plays an important role in deposition of calcium and may prevent rickets and may be an effective aid in promoting the soundness of bones and teeth. There is no warrant for the claim, however, that ultraviolet rays will insure normal tooth structure or that ultraviolet rays will prevent dental caries. Direct exposure of the skin to ultraviolet rays from the sun or from artificial sources results in the formation of vitamin D within the organism but the Council cannot recognize statements or implications that vitamin D has all the beneficial effects of exposure to sunshine. Advertising claims for sun lamps containing statements that exposure to ultraviolet radiation increases or improves the tone of tissues of the body as a whole, stimulates metabolism, acts as a tonic, increases mental activity or tends to prevent colds are not acceptable to the Council.

WAPPLER TUBE-GAP RADIO KNIFE ACCEPTABLE

Manufacturer: Complex Division, American Cystoscope Makers, Inc., 1241 Lafayette Avenue, Bronx, New York.

The Wappler Tube-Gap Radio Knife is an electrosurgical unit providing either tube or spark-gap current. It is available in a portable or cabinet housing. Standard accessories include the following electrodes: blade, for dissection; loop, for excavation; smaller loop, for same purpose; needle, for coagulation, and a blade designed for ionization of the cervix. Complete with accessories, the portable unit weighs about 34 pounds. The cabinet model utilizes storage space in the subcabinet for



Wappler Tube-Gap Radio Knife.

a converter when only direct current is available. It weighs 90 pounds. Two types of unit are available of the cabinet size; one is operated by floor-switch, the other by manual control.

Two independent electrical circuits are utilized, vacuum tube and spark-gap. Current is available for simultaneous cutting and coagulation, either in air, under water or in blood.

The following points about the unit were determined by the Council investigator: The spark-gap is fixed

in the portable model so that alterations in power cannot be made. However, the spark-gap current is satisfactory for biterminal coagulation, either on needle or ball electrode. When used on a uniterminal connection it will also produce a milder form of coagulation. The cabinet models are provided with a control for regulating the intensity of the damped current.

The tube circuit supplies both dissecting and coagulating currents. The dissecting current can be varied by a control switch, allowing all grades of cutting from mild, slow dissection to powerful cutting, serviceable in wet places. The stronger grades of the dissecting current produce satisfactory coagulation, but as with any radiotube cutting current of high power there is a flamelike spark which carbonizes and produces some smoke. This is true when an arc exists between the active electrode and the tissues. This instrument is powerful enough to produce cutting currents either with a uniterminal or with a biterminal connection.

With the tube coagulating current, mild coagulating effects are obtainable using a uniterminal connection. With a biterminal connection, of course, the coagulating effects are greater. Here again there is some charring if an arc exists between the coagulating electrode and the tissue. However, with a ball electrode accurately approximated to the tissues, this tube coagulating current produces uniform, deep coagulation. One drawback in this circuit as well as in the gap-coagulating current in the portable model is that its intensity is fixed and cannot be varied for different operations except by jumping from heavy coagulation with a biterminal current to superficial coagulation

with a uniterminal current. This is not true for the cabinet models. In the cabinet model, only the intensity of the tube coagulating current is fixed.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Wappler Tube-Gap Radio Knife for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE COUNCIL ACCEPTED SULFANILAMIDE, AND A STATEMENT OF ACTIONS AND USES AND OF DOSAGE APPEARED IN THE JOURNAL JULY 31, 1937, PAGE 358. A REVISED STATEMENT WAS PUBLISHED OCT. 30, 1937, PAGE 1454; A SECOND REVISION WAS PUBLISHED IN THE JOURNAL FEB. 25, 1939, PAGE 733. A GREAT DEAL OF WORK HAS BEEN DONE WITH THIS PRODUCT SINCE THAT TIME AND THE COUNCIL BELIEVED THAT A FURTHER REVISION WAS NECESSARY. THE COUNCIL, THEREFORE, AUTHORIZED PUBLICATION OF THE FOLLOWING REVISION OF THE DESCRIPTION AND VOTED INCLUSION IN NEW AND NONOFFICIAL REMEDIES 1940.

PAUL NICHOLAS LEECH, Secretary.

SULFANILAMIDE (See New and Nonofficial Remedies, 1939, page 463).

Actions and Uses.—Originally it was reported that sulfanilamide was active against infections produced by Lancefield's group A strains of hemolytic streptococci by virtue of an apparent specific effect on these organisms. It has since been shown that this drug has a much lesser degree of activity against infections of the tissues due to strains of Lancefield's group B hemolytic streptococci and that it has but a moderate degree of effectiveness in those infections produced by streptococci belonging to Lancefield's group C. The drug is valueless in enterococcal infections but has a definite chemotherapeutic activity in infections caused by the salivarius and mitis strains of the alpha hemolytic streptococci, provided the disease entity is not subacute bacterial endocarditis. Experimental and clinical evidence shows that sulfanilamide has a chemotherapeutic effect in infections produced by the meningococcus, gonococcus and *Clostridium welchii*, and that it is of value in the treatment of certain infections of the urinary tract, notably those due to *Bacterium coli* and *Proteus vulgaris*. The drug also has some degree of chemotherapeutic activity in the treatment of infections due to *Brucella organism*, the virus of lymphogranuloma venereum chancroid and in certain stages of trachoma. Its value in the treatment of pneumococcal, staphylococcal and Friedländer's bacillary infections is less than that of sulfapyridine. The drug is not very useful in the treatment of typhoid or paratyphoid infections.

Although the exact mode of action of sulfanilamide on susceptible bacteria is still uncertain, experimental evidence indicates that at least one action of sulfanilamide (and possibly the only one of importance) is to render blood, spinal fluids, urine and other tissue fluids unfavorable as mediums for supporting the active multiplication of susceptible bacteria. In consequence, tissue invasion of these organisms may be prevented, production of toxic substances reduced, and the antibacterial mechanisms of the host permitted to complete recovery from the infection.

Toxicity.—No patient should be treated with sulfanilamide or sulfapyridine unless arrangements are made for daily attention by a physician. This is necessary because of the serious toxic effects of these drugs, which, while not frequent, are generally unpredictable in their occurrence and presumably have as their basis a peculiar idiosyncrasy. Many patients receiving sulfanilamide will have signs and symptoms of central nervous system disturbances such as headache, dizziness, nausea, vomiting, mild depressions or elations and, in a few instances, severe toxic psychoses. Because of these toxic manifestations, patients who are receiving the drug should be warned against driving automobiles, piloting or riding in airplanes, and from doing any heavy or dangerous work in which a spell of dizziness might result in a serious accident. Practically all individuals who receive therapeutic doses of the drug develop some degree of cyanosis, generally apparent in the lips and nail beds but which may suffuse through the entire integument. The exact mode of production of this cyanosis is unknown, although in many instances it is due, at least in part, to the production of methemoglobin in the blood. It is not, in the opinion of most observers, a serious complication and rarely serves as an indication that treatment should be discontinued. Drug fever, which generally occurs between the fifth and ninth days of therapy, is a not uncommon toxic manifestation. Rashes, which may vary markedly in their type and which may be accompanied by fever, are also reported.

infrequently seen in the course of sulfanilamide therapy. As these rashes are sometimes the result of a photosensitization of the skin, it is probably best for patients who are receiving sulfanilamide to keep out of the sun, and they should not receive ultraviolet irradiation.

Acidosis may be produced by the drug in certain individuals. The routine, concurrent use of sodium bicarbonate generally prevents this complication of drug therapy. Hepatitis, accompanied by jaundice and, in a few instances, ending fatally, is one of the rarer complications of sulfanilamide therapy. Acute hemolytic anemia, occurring from the third to the fifth day of therapy, is not uncommon and seems to happen more frequently in Negro patients than in white patients. A severe leukopenia may occur at any time during the course of therapy, and granulocytopenia has been described not uncommonly as a toxic manifestation. In patients who have a decrease in renal function the normal excretion of the drug is impaired, and an accumulation of sulfanilamide in the blood and tissues of the patient may occur if care is not taken in regulating the dosage of the drug.

It has been observed that patients who have had a severe toxic reaction in the course of the administration of sulfanilamide may, if the drug is given for a second time, develop an even more severe reaction. Hence the history of a previous toxic reaction to sulfanilamide constitutes in itself a most serious contraindication to the use of the drug.

As far as is known, practically all other drugs may be prescribed concurrently (but not in combination) with sulfanilamide. The only exceptions to this rule are the saline laxatives, because the development of sulfhemoglobinemia has been attributed by some observers to concurrent magnesium sulfate therapy.

Dosage.—The dose of sulfanilamide depends on the type and severity of the infection. As yet there is not a complete unanimity of opinion as to what constitutes the best system of therapy in the various diseases. It is suggested that in adults in cases of serious infections the dose be 1 Gm. (15 grains) every four hours for forty-eight hours and then from 0.5 Gm. ($7\frac{1}{2}$ grains) to 0.66 Gm. (10 grains) every four hours thereafter. It is to be remembered that the main index for the control of therapy with this drug should not be the dose of the drug which has been prescribed but rather the concentrations of sulfanilamide that are being obtained in the blood or other tissue fluids. Because of this, it is always desirable to determine the values for sulfanilamide in the blood and body fluids at frequent intervals by the method recently described by Bratton and Marshall (*J. Biol. Chem.* 128:537 [May] 1939). It is usually advisable to continue therapy for a few days after clinical recovery has taken place in order to avoid relapses. Infants will tolerate the drug well, the dose being from one third to one half of the adult dose, while children require from one half to three fourths of the adult dose. Patients who cannot take the drug by mouth may be given subcutaneous injections of a 1 per cent solution of sulfanilamide made up in physiologic solution of sodium chloride or, better still, in one-sixth molar sodium racemic lactate solution. The same total dosage may be employed for parenteral as for oral administration, but the injections should be given at intervals of from six to eight hours.

SULFAPYRIDINE

THE COUNCIL ACCEPTED SULFAPYRIDINE AND A STATEMENT OF ACTIONS AND USES AND OF DOSAGE APPEARED IN THE JOURNAL, MAY 6, 1939, PAGE 1831. A GREAT DEAL OF WORK HAS BEEN DONE WITH THIS PRODUCT SINCE THAT TIME AND THE COUNCIL BELIEVED A REVISION IS IN ORDER TO BRING THIS STATEMENT UP TO DATE. THE COUNCIL THEREFORE AUTHORIZED PUBLICATION OF THE FOLLOWING REVISION OF THE DESCRIPTION AND AUTHORIZED ITS INCLUSION IN NEW AND NONOFFICIAL REMEDIES 1940.

PAUL NICHOLAS LERCH, Secretary.

SULFAPYRIDINE (See Revised Supplement to New and Nonofficial Remedies, 1939, p. 28).

Actions and Uses.—It has been shown that sulfapyridine is an effective chemotherapeutic agent in the treatment of experimental pneumococci, streptococci, meningococci, staphylococci, Friedländer's bacillary and Welch bacillary infections in mice. Clinically, therapeutic successes have been reported in the treatment of pneumococci lobar and bronchial pneumonia and gonococci, staphylococci, meningococci and streptococci infections. However, the evidence of its effectiveness is convincing only in respect to its use in pneumococci infections (in which it is apparently about equally effective against all known types of pneumococci) and in gonococci infections. Its use in other types of infections must still be considered as in the experimental stage at this time.

In comparison with sulfanilamide, sulfapyridine is irregularly and often poorly absorbed. These differences in absorption seem to be due to an individual response on the part of the patient. The drug is, as a rule, conjugated to the acetylated form in the

blood and tissues to a higher degree than is sulfanilamide. These factors make it highly desirable that the concentrations of sulfapyridine be determined in the blood of patients who are receiving this drug, as irregularities in its absorption and conjugation may make treatment with it more difficult than when sulfanilamide is used. As far as is known, that fraction of the drug which is absorbed is excreted mainly by the kidneys in the free and conjugated forms. As a rule, the drug is conjugated to the acetylated form in the urine to a higher degree than is sulfanilamide. Excretion of sulfapyridine is slower than is that of sulfanilamide and it may be four or five days after the drug has been stopped before it is entirely eliminated from the body.

No patient should be treated with sulfapyridine unless arrangements have been made for daily attention by a physician. If the patient is suffering from lobar or bronchial pneumonia, every effort should be made to ascertain the etiologic agent which is causing the pneumonia, and if it is a pneumococcus to type the organism, in order that serum may be given if the pneumonia proves resistant to sulfapyridine therapy. It is not known at the present time just what percentage of patients ill with pneumococci pneumonia will prove resistant to treatment with this drug.

Toxicity.—The toxic manifestations of sulfapyridine therapy are essentially those previously noted in the course of sulfanilamide therapy, and while, in general, the occurrences of toxic manifestations are not as frequent when sulfapyridine is used, they may be very severe. The toxic effects of this drug are unpredictable in their occurrence and presumably have as their basis a peculiar idiosyncrasy. Nausea and vomiting, sometimes very severe, are much more frequent in the course of sulfapyridine therapy than in that with sulfanilamide. The administration of sulfapyridine should not necessarily be discontinued because of vomiting, which often occurs early in the treatment and may cease later. Dizziness, headache and mild or severe mental reactions have been recorded. Cyanosis is less marked as a rule. Acidosis has not been noted. Drug fever and dermatitis are somewhat less frequent in the course of sulfapyridine therapy. Acute hemolytic anemia may occur within the first few days of treatment, and severe leukopenia or even granulocytopenia is not uncommon. It has been noted that children who are receiving sulfapyridine are more likely to develop a severe leukopenia than is the case when sulfanilamide is being given. Serious instances of hepatitis have been reported. Instances of gross hematuria with and without signs of renal failure have been noted in patients receiving this drug. It is likely that the hematuria is associated with the formation of acetylsulfapyridine calculi in the renal tubules and pelvis, although the possibility of a direct toxic action on the kidney has not yet been ruled out. Because it is known that acetylsulfapyridine crystals are frequently found in the urine of patients who are receiving sulfapyridine, it is wise to administer enough fluid to keep their urinary output at a normal level (from 1,000 to 1,500 cc.) or slightly above such a level in order to lessen the possible chances of calculus formation. If severe toxic manifestations of drug therapy arise, sulfapyridine should be stopped and fluids forced in order that it may be eliminated from the body as quickly as possible.

Dosage.—Adequate standards of dosage have not as yet been agreed on by investigators who have used this drug in the treatment of pneumococci or other infections. However, the evidence points to the fact that it is important to establish adequate blood levels of the drug within the first day of treatment. Hence in adults suffering from lobar pneumonia large initial doses are given, such as 4 Gm. in a single dose followed by 1 Gm. of the drug every four hours by mouth, this to be continued until the temperature has been normal for at least forty-eight hours; then the dose may be cut to 1 Gm. every six hours and continued until the resolution of the pneumonic process is well under way. At this point the dose of the drug should be reduced to 0.5 Gm. four times a day and should be continued until the lungs are clear. It has been noted that, if treatment with the drug is stopped too soon, recurrence of the pneumonic process may occur. Concentrations of 4 mg. or more of free sulfapyridine for each hundred cubic centimeters of blood seem to be necessary for prompt therapeutic responses to the drug.

In children the initial dose should be from 1 to 2 Gm., depending on the weight of the child, and then from 0.5 to 1 Gm. every four or six hours until the temperature has been normal for forty-eight hours. Following this, the dose of the drug may be gradually reduced until the lungs are clear.

Adequate standards of dosage have not been worked out for the drug in other types of infections.

For determination of sulfapyridine in body fluids, a method developed by A. C. Bratton and E. K. Marshall Jr. (*J. Biol. Chem.* 128:537 [May] 1939) is to be recommended.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 27, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

THE ARCHITECTURE OF VIRUSES

Because the viruses possess properties characteristic of living organisms and may cause disease they interest not only the biologist and bacteriologist but also the pathologist. As some of them have characteristics of molecules they likewise draw the attention of the chemist. Even the philosopher is attracted by them because they throw new light on the question of the nature of life. In a recent review Stanley,¹ whose name is intimately associated with the study of proteins, not only presents recent advances in virus research but also speculates on the possible relationship between the atomic theory of matter, the germ theory of disease and the cell theory of life. The architecture of viruses is even more complex than that of the proteins; while simpler viruses seem to be composed of protein and nucleic acid, others also contain carbohydrate and the

most complex contain materials which are indistinguishable from those found in bacteria. Although certain of the viruses exhibit chemical and physical characteristics of nucleoproteins and are called molecules by some investigators, the same particles are referred to by others as organisms or cells. Since a number of the viruses have been obtained in crystalline form, it is interesting to note Stanley's conclusion that crystallinity of itself is not evidence as to the animate or inanimate nature of a material.

Much valuable information has been afforded by studies made on the tobacco mosaic virus, which fortunately, unlike most other viruses, is readily obtainable in comparatively large quantities. Tobacco mosaic virus, like other nucleoproteins, yields only amino acids and nucleic acid on hydrolysis. The linkage between the protein and nucleic acid moieties of the virus is, however, not yet known. Although the tobacco mosaic virus has been degraded by various means, in no instance other than in one unconfirmed report² have the breakdown products been found to possess virus activity. Apparently this activity is due to a unique architecture that is characteristic of the large molecule as a unit and not to any dissociable prosthetic group. Nucleic acid probably has an important part in this structure, since it has been found in all the viruses that have been purified. The glutamic acid isolated from virus protein after hydrolysis is the naturally occurring stereo-isomer. Considerable importance has been attached to the reported isolation of the unusual form of glutamic acid from malignant tissue.³

Viruses vary greatly with respect to the size of the ultimate particle. They may be arranged in an unbroken series from those, such as psittacosis virus, which are 275 millimicrons in diameter, down to poliomyelitis and foot-and-mouth disease viruses, which are only about 10 millimicrons in diameter. Some of the viruses are therefore larger than some accepted living organisms, while others are smaller than certain protein molecules. Stanley points out that the chemist and the pathologist have a common meeting ground in that the pathologist is willing to recognize that the smallest virus, even though a nucleoprotein molecule, and the largest living organism are representatives of a common series in which there is an almost imperceptible gradation of substance and of function. The chemist recognizes the virus proteins as large molecules and realizes moreover that the properties of the viruses must be a direct result of their structure, just as the chemical, physical and biologic properties of ordinary molecules are dependent on structure. According to Stanley there is no reason, from the point of view of structure, why a single structural entity which is called a molecule should not be larger than the ordered group

2. Frampton, V. L., and Saum, A. M.: *Science* 80: 24 (Jan. 27) 1939.

3. Kögl, Fritz, and Exlehen, Hanni: *Zschr. f. physiol. Chem.* 258: 57 (March 14) 1939.

1. Stanley, W. M.: *Physiol. Rev.* 19: 524 (Oct.) 1939. Compare the Harvey Lectures 33: 170, 1937-1938.

of structural entities which is called a cell. This investigator is likewise of the opinion that both the cell theory and the atomic theory should be used to define accepted orders of structure and that neither should be handicapped by reference to the living state. Indeed, the transition between these accepted orders of structure may be so gradual that the designation of intervening entities as cells or molecules may be a matter of choice. It is furthermore reasonable to believe that the nature of the bonds between units within cells, as well as the nature of the bonds which hold together the large nucleoprotein, does not differ fundamentally from forces which are already known to exist in atoms.

The venturesome conception of Stanley leads to a blending of the atomic theory, the germ theory and the cell theory into a unified philosophy, the essence of which is structure or architecture. According to this hypothesis the chemical, biologic and physical properties of matter are directly dependent on structure, whether the matter consist of atoms, molecules, germs or cells. Thus the structure of the virus entities would be held responsible for their remarkable properties.

PASTEURIZATION OF MILK

Originally the heat treatment of milk was carried out primarily to improve the keeping qualities of raw milk so as to permit transportation in bulk over comparatively long distances with a minimum of loss due to spoilage. Only later with the realization that pasteurization was effective in destroying pathogenic organisms which might be present did the public health aspects of pasteurization assume their present importance.

The question is sometimes raised as to whether or not pasteurization entails any considerable sacrifice of some of the important nutritive properties of milk. A review by Kay¹ presents some observations on this aspect of pasteurization. Recent well controlled investigations carried out by different workers on the comparative nutritive value of raw milk and pasteurized milk when fed to calves have shown that little difference exists between the two types of milk. In these studies not only rate of growth, physical condition and bodily measurements but also blood composition and, in some cases, tuberculin tests were used as criteria of comparison. The results of such investigations have been succinctly summed up by Bartlett,² who concluded that raw milk has for calves a nutritive value almost identical with the value of pasteurized milk and that, if there is any difference in favor of raw milk, it is so small that it is readily masked by small variations in the experimental conditions. On the other hand, this investigator observed that a considerable risk of spreading tuberculosis among calves is incurred if they are given commercial raw milk.

The thesis that there is little difference in the nutritive value of raw and pasteurized milk is also, in general, supported by observations made in experiments on rats. Not only are the digestibility and biologic value of the nitrogenous compounds of milk unaffected by commercial holder pasteurization, but also the nutritional availability of calcium and phosphorus of the milk for rats is unchanged by this procedure. Although an adverse effect of holder pasteurization on the vitamin B complex of milk may be demonstrated when rats on appropriate diets are used as experimental animals, the vitamin loss is not serious. It is difficult to extend investigations of the comparative nutritive value of raw and pasteurized milk to children and even more difficult to interpret the results in view of the many variable factors involved. However, a comparative study made abroad on several thousand school children, some of whom received raw milk and others a like quantity of pasteurized milk as an adjunct to the diet, showed that there was no significant difference between the two groups of children after a protracted period.³ Comparisons involving such factors as increments in weight and height, chest measurements and dynamometer pulls were made. Although slight variations in the nutritive value of the two types of milk would hardly be revealed by such a study, the experiments did indicate that there was at least no serious loss in the nutritive value of milk as a result of pasteurization.

Attempts have been made also by chemical and physical means to determine changes in the nutritive value of milk that might be occasioned by pasteurization. The chemical determination of vitamin B₁ before and after this heat treatment has shown that there is a loss of some 20 per cent of the vitamin as a result of the process. Similarly, chemical determinations of ascorbic acid before and after pasteurization indicate that there is a decrease in the content of this vitamin. The loss appears to be only about 20 per cent, however, and not 50 per cent as was previously surmised.⁴ In this connection it is interesting to note that a shortening of the time interval between milking the cows and pasteurizing the milk apparently favors the retention of vitamin C. Although it has been reported that milk on pasteurization loses some 20 per cent of its iodine content,⁵ it is unlikely that this loss would ordinarily be significant. The experiments indicate, therefore, that from 20 to 25 per cent of vitamin B₁, vitamin C and iodine may be lost by pasteurization. All the other known nutritive constituents of cow's milk seem to be unaffected. Indeed, it has been stated that seasonal variations in the nutritional quality of milk are of greater nutritional significance than differences due to pasteurization. The advantages of pasteurization are apparent; by this process not only are the keeping qualities of milk increased but relatively clean milk may be

1. Kay, H. D.: *Nutrition Abstr. & Rev.* 9:1 (July) 1939.

2. Bartlett, S.: *Milk and Nutrition*, part III, p. 25, Reading, Poynder, 1938, cited by Kay.¹

3. *Milk and Nutrition*, part II, cited by Kay.¹

4. Holmes, A. D.; Tripp, Francis; Woeffer, E. A., and Satterfield, G. H.: *J. Am. Dietet. A.* 15:363 (May) 1939.

5. Magee, H. E., and Glennie, A. E.: *Biochem. J.* 22:11, 1928.

rendered safe without appreciable loss of its nutritive qualities. It should be emphasized, however, that pasteurization of milk is only an adjunct of rigid sanitary control of the methods of production and is not intended to supplant this control.

Current Comment

DOMESTICS AS TYPHOID CARRIERS

Recently there has been renewed interest in the public health aspects of domestic service and in attempts to minimize the health hazards incident to domestic employment by periodic examinations.¹ Additional emphasis is given to this problem by the recent report² from the director of public health, San Francisco, of four domestics revealed to be typhoid carriers in 1939. In each instance the carrier was identified after the development of typhoid in the family or, in one instance, in the cafeteria in which the domestic was employed. None of these four carriers ever gave a history of having had the disease. Such circumstances merely serve to reemphasize facts already well known; namely, that only healthy adults should be in contact with children or for that matter with other adults. Existing health regulations in most communities still neglect in large measure the safeguards for the health of children in regulating and demanding physical and laboratory examinations of domestics associated with children or engaged in the handling of foodstuffs.

THE CONTINUOUS POPULATION RECORD

On the eve of the 1940 decennial census of the United States the advantages of the continuous system of recording population statistics sometimes called a national register deserve attention. The continuous plan has already been in operation in several European countries, notably the Netherlands, Belgium and Sweden, and has been proved both practicable and valuable. More recently Great Britain¹ has begun the transition from a periodic to a continuous record. Although the outbreak of the war will make this change more difficult in Britain, it also makes the continuous census more important from the standpoint of evaluating national population resources. In countries in which the continuous accounting system has been developed there is a permanent registration of all inhabitants, somewhat similar to the registration of voters in some parts of the United States.² A change of residence is reported to the proper local officials, so that a record of the status of the population at any time is then possible merely by drawing a balance of the registers. Although obviously more expensive than the periodic census, the advantages of records abreast of the time

are such as to warrant the serious consideration of its introduction into this country at an early date. In fact it might be possible to reduce expense considerably and to initiate the measure with a maximum of efficiency by working around the technical organization which is now being prepared for the decennial census. The fear which might be expressed in some quarters that such a measure could be used as the introductory wedge in a series of moves for "regimentation" would not appear to be warranted by the experience in such countries as Sweden, Belgium and the Netherlands. The introduction of a continuous population record should be considered exclusively as a means of improving scientific observation in social demography.

A CASE OF MEDICAL NEED

Not long ago a man in Bergen County, N. J., wrote a letter to Mrs. Franklin D. Roosevelt, stating that he had not received medical treatment and asking for assistance. As Mrs. Roosevelt points out frequently in her column "My Day," she is regularly in receipt of such letters; in fact, every writer of a health column and every one in public life receives requests of this type. Unfortunately, it is not possible to make a complete investigation of every such request. They are usually turned over by President Roosevelt and Mrs. Roosevelt to the Surgeon General of the United States Public Health Service. Recently it has become the practice of the United States Public Health Service, because of the survey of medical needs carried out by the American Medical Association, to send such letters to the secretaries of the state medical societies involved. In the case of the letter here mentioned it was sent to the secretary of the Medical Society of New Jersey, who turned it over to the president of the Bergen County Medical Society, who in turn referred it to the chairman of the Public Health Committee, who happened to be a resident of the community from which the letter came. Now it happened also that this physician had actually been treating the patient who wrote the letter. The patient was seen during 1934, at which time the doctor made a diagnosis and gave treatment. The patient did not, however, return to the doctor until 1936, at which time he found that the patient had been in the hands of a chiropractor during 1934, 1935 and 1936. In 1936 the patient had a "stroke," so that the chiropractor was dismissed and the doctor was called. The doctor treated the patient from December 1936 to March 1937, at which time the patient moved from the state, coming back in 1938. The doctor treated the patient steadily until Dec. 18, 1939, which incidentally was about the time when the patient wrote to Mrs. Roosevelt. The doctor's record indicates that his total receipts from the patient during the period from 1934 to 1939 were \$19. Mrs. Roosevelt was sent a complete report of this case of medical need (?). No doubt there are many instances in which there is actual need for medical service and in which it has been difficult, if not impossible, for a patient to secure adequate medical service. However, there are also many instances in which alleged medical need is made the excuse for solicitation for financial assistance.

1. Medical Examinations for Domestics, editorial, J. A. M. A. 111: 255 (July 16) 1938.

2. Geiger, J. C.: Domestic Employment as a Possible Causative Factor in Certain Types of Communicable Disease, report from the office of the Director of Public Health, City and County of San Francisco, Jan. 3, 1940.

1. The National Register, Nature 144: 669 (Oct. 7) 1939.

2. The Problems of a Changing Population, National Resources Committee, May 1938.

ORGANIZATION SECTION

OFFICIAL NOTES

THE NEW YORK SESSION

Applications for Space in the Scientific Exhibit

Applications for space in the Scientific Exhibit at the New York Session close February 1. Applications should be sent to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

SPECIAL BLUE NETWORK BROADCAST

February 21 from 9 to 9:30 p. m. central standard time (10 to 10:30 eastern standard time, 8 to 8:30 mountain time and 7 to 7:30 Pacific time) there will be a special broadcast by the American Medical Association and the National Broadcasting Company over seventy stations of the Blue network. The subject will be "Pasteur Conquers Rabies."

The broadcast will be based on an article "Watch Your Dog!" appearing simultaneously in *Hygieia* and on official reports dealing with the seriousness of the rabies situation in the United States.

Special features of the program will be music arranged by Don Markotte of the National Broadcasting Company Music Library from the score which accompanied the motion picture production of Louis Pasteur, starring Paul Muni. This music is made available through the special courtesy of Warner Brothers. An augmented N. B. C. orchestra, directed by Joseph Gallicchio, will render the music. Dramatizations taken from the life of Pasteur and arranged for radio by William J. Murphy will be enacted by a specially selected cast of N. B. C. radio actors, under the direction of J. Clinton Stanley, director of the series *Medicine in the News*.

A limited number of tickets for admission to the studio will be available to physicians in Chicago and vicinity. Tickets will be limited to two per application. Requests should be sent by mail to the Bureau of Health Education, American Medical Association, 535 North Dearborn Street, Chicago, enclosing a stamped, self-addressed envelop. Telephone requests cannot be received. Applications will be filled in the order in which they are received until all the tickets have been distributed.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Program of Meetings to Be Held in Chicago, February 12 and 13

The Thirty-Sixth Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, February 12 and 13. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY, FEBRUARY 12, 10 A. M.

Report of the Council on Medical Education and Hospitals.

Ray Lyman Wilbur, M.D., LL.D., Chairman, Stanford University, California.

Addenda to the Agenda for 1940-1950.

Alan Gregg, M.D., Director, The Medical Sciences, The Rockefeller Foundation, New York.

Professional Education.

C. S. Boucher, Ph.D., Chancellor, University of Nebraska, Lincoln.

The Goal of Medical Education.

Irvin Abell, M.D., Vice Chairman, Board of Regents, American College of Surgeons, Louisville, Ky.

Graduate Work in Medical Areas.

George D. Stoddard, Ph.D., Dean, Graduate College, State University of Iowa, Iowa City.

Trends in Liberal Arts Education.

George A. Works, Ed.D., Professor of Higher Education, Department of Education, University of Chicago.

MONDAY, FEBRUARY 12, 2:15 P. M.

Program for the Instruction of Interns.

Nathan B. Van Etten, M.D., President-Elect, American Medical Association, New York; Nathan Smith, M.D., Deputy Medical Superintendent, Morrisania City Hospital, New York.

Medical Education—1905 to 1940.

Morris Fishbein, M.D., Editor, Journal of the American Medical Association, Chicago.

Medical Education in Relation to the Naval Service.

Ross T. McIntire, M.D., Rear Admiral, Medical Corps, and Surgeon General, United States Navy, Washington, D. C.

The Work of the National Board of Medical Examiners During Its First Quarter Century.

Louis B. Wilson, M.D., Director Emeritus, Mayo Foundation for Medical Education and Research, Rochester, Minn.

American Contributions to Medical Education in China and India.

Edward H. Hume, M.D., Director, Christian Medical Council for Overseas Work, New York.

TUESDAY, FEBRUARY 13, 10 A. M.

The Place of Malignant Disease in the Medical Curriculum.

Ludvig Hektoen, M.D., LL.D., Executive Director, National Advisory Cancer Council, Washington, D. C.

The Selection of Medical Students.

Irving S. Cutter, M.D., LL.D., Dean, Northwestern University Medical School, Chicago.

The Recognition of Professional Aims in the Teaching of the Fundamental Medical Sciences.

M. B. Visscher, M.D., Ph.D., Professor of Physiology, University of Minnesota Medical School, Minneapolis.

Opportunities for a Medical Career in the Federal Civil Service.

A. Ray Dawson, M.D., Senior Medical Officer, Examining Division, United States Civil Service Commission, Washington, D. C.

Role That a Children's Hospital Should Play in the Community.

Alan Brown, M.D., Professor of Pediatrics, University of Toronto Faculty of Medicine, Ontario.

The Integration of Preventive Medicine in the Education of a Physician.

S. P. Lucia, M.D., Assistant Professor of Medicine, University of California Medical Center, San Francisco.

THE FEDERATION OF STATE MEDICAL BOARDS

MONDAY, FEBRUARY 12, 6:30 P. M.

FEDERATION DINNER

Presidential Address.

Roy B. Harrison, M.D., President, Federation of State Medical Boards of the United States, New Orleans.

Address.

Nathan B. Van Etten, M.D., President-Elect, American Medical Association, New York.

TUESDAY, FEBRUARY 13, 9:30 A. M.

The Refugee Physician.

Joseph H. Pratt, M.D., Boston Committee on Medical Emigrés.

Inter-American Relation in Medical Education and Licensure.

Walter L. Bierring, M.D., Secretary-Treasurer, Federation of State Medical Boards of the United States, Des Moines, Iowa.

Social Implications of the Licensure Program.

Frances P. DeLaney, Ph.D., Assistant Professor of Political Science, West Virginia University, Morgantown.

Advisory Council on Medical Education as Related to Licensure.

Willard C. Rappleye, M.D., Dean, Columbia University College of Physicians and Surgeons, New York.

TUESDAY, FEBRUARY 13, 2 P. M.

Relationship Between Advertising and the Practice of Medicine.

K. E. Miller, M.D., Senior Surgeon, United States Public Health Service, Federal Trade Commission, Washington, D. C.

The Philosophic Trend of Medical Practice Laws.

H. M. Platter, M.D., Secretary, Ohio State Medical Board, Columbus.

The Advantages of a Single State Board of Medical Examiners.

J. N. Baker, M.D., Secretary, Alabama State Board of Medical Examiners, Montgomery.

Executive Session.

CENTRAL COUNCIL FOR NURSING EDUCATION

MONDAY, FEBRUARY 12, 12:15 P. M.

Luncheon for Lay Boards of Hospitals and Public Health Nursing Organizations.

Address: A Plan for Meeting the Nursing Needs in the Community.

Miss Elizabeth Fox, R.N., Executive Director, New Haven Visiting Nurse Association and Associate Professor, Yale School of Nursing.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—H. R. 7922, the Independent Offices Appropriation Bill, has passed the House of Representatives. In connection with the appropriation for the Veterans' Administration, an amendment was adopted providing that no part of the appropriation shall be used for hospitalization or examination of persons other than veterans, "unless a reciprocal schedule of pay is in effect with the agency or department involved." In support of this amendment, it was pointed out that employees of several federal agencies, including the Civilian Conservation Corps, the Works Progress Administration, the Post Office Department, the Civil Service Commission, and the Unemployment Compensation Commission and beneficiaries of the Railroad Retirement Board, are being examined by the medical staffs of the Veterans' Administration facilities scattered throughout the country. In many cases the employees of these federal agencies are hospitalized and spend many weeks in veterans' facilities. All the agencies referred to, it was pointed out, reimburse the Veterans' Administration at the rate of \$3.75 a day for each person receiving medical service, with the exception of the Post Office Department, the Civil Service Commission and the Unemployment Compensation Commission. These three agencies, it was stated, enjoy a special privilege that is charged to the expenses entered against the veterans of wars. During the month of December 1939, it was stated, 1,323 employees of the Post Office Department, Civil Service Commission and the Unemployment Compensation Commission were examined by the medical staffs of various veterans' hospitals. In order to make a complete medical check-up on these federal employees, it was necessary for the physicians to conduct 3,812 separate examinations. According to a state-

ment made on the floor of the House when this amendment was being considered, there were 1,176 nonveterans hospitalized in veterans' facilities as of Jan. 4, 1940.

Bills Introduced.—H. R. 7838, introduced by Representative Peterson, Georgia, provides that where a veteran during a peacetime enlistment contracts pulmonary tuberculosis in the service and in line of duty, and where service connection and pension is granted by reason thereof and where the tuberculosis has become or does become an arrested case, then such veteran shall be paid a pension of not less than \$50 a month. H. R. 7874, introduced, by request, by Representative Rankin, Mississippi, provides that the terms "permanent and total" or "total permanent" wherever used in laws relating to the payment of compensation or pension to veterans of the World War shall be defined as any reasonably permanent impairment or defect of mind or body, or both, which prevents the individual from following a substantially gainful occupation, provided that, without prejudice to any other cause of disability or employability, the permanent loss of the use of both feet, of both hands or of both eyes, or of one foot and one hand, or of one foot and one eye, or of one hand and one eye, or the loss of hearing of both ears, or the organic loss of speech shall be deemed total permanent disability.

DISTRICT OF COLUMBIA

Bills Introduced.—S. 3124, introduced by Senator King, Utah, and H. R. 7865, introduced by Representative Cochran, Missouri, propose to enact a new dental practice act for the District of Columbia. The bill exempts from its provisions "a legally qualified physician or surgeon unless he practices dentistry as a specialty."

WOMAN'S AUXILIARY

Arkansas

An auxiliary to the Jefferson County Medical Society was organized at Pine Bluff October 3. Mrs. Virgil Payne was elected president.

At a joint meeting of the auxiliaries to the Arkansas County and the Monroe County Medical Societies November 7, Mrs. C. E. Kitchens, president of the auxiliary to the Arkansas State Medical Society, discussed the subject "Health."

At the November meeting of the auxiliary to the Sebastian County Medical Society, members voted to contribute \$10 to the student loan fund of the state auxiliary and to renew *Hygeia* subscriptions which were placed last year in clubs, institutions and schools of the Fort Smith area. At this meeting, Dr. Thomas P. Foltz, president of the Sebastian County Medical Society, discussed "Socialized Medicine." Dr. Foltz advised auxiliary members of ways in which they might cooperate with the medical society in its care of indigent patients.

During the meeting of the Second Councillor District Medical Society in Searcy October 19, visiting doctors' wives were entertained by the auxiliary to the Independence County Medical Society.

Mrs. S. H. Watson, president of the auxiliary to the Texas State Medical Association, Mrs. C. E. Kitchens, president of the auxiliary to the Arkansas Medical Society, and Mrs. W. K. West, past president of the auxiliary to the Southern Medical Association, were speakers at a luncheon given in their honor recently by the auxiliary to the Bowie-Miller Counties Medical Society in Texarkana.

Illinois

The auxiliary to the Chicago Medical Society entertained the board of directors of the Woman's Auxiliary to the American Medical Association with a reception and luncheon at the Palmer House, Chicago, followed by a program at the Museum of Science and Industry in Jackson Park November 16, the day preceding the annual fall board meeting of the Woman's Aux-

iliary to the American Medical Association. Mrs. Charles Segal, president, and members of the council of the auxiliary to the Chicago Medical Society welcomed the officers, directors and chairmen of standing committees of the auxiliary to the American Medical Association, and also presidents of auxiliaries to state medical societies. Speakers on the program at the museum were Mr. Rufus C. Daves, president of the museum; Dr. William Allen Pusey, a trustee of the museum and chairman of its medical advisory committee; Dr. Philip Fox, director of the museum; Dr. Eben J. Carey, curator of the medical science exhibits of the museum, and Mrs. Rollo K. Packard, president of the auxiliary to the American Medical Association. Officials of the museum arranged a specially conducted tour following the program.—At the opening meeting of the auxiliary to the Chicago Medical Society in October, Mrs. Arthur I. Edison, chairman of the legislative committee of the auxiliary, spoke on medical legislation in Illinois.—At the December meeting of the auxiliary, Mrs. Eben J. Carey, chairman of the Hygeia Committee of the auxiliary to the American Medical Association, spoke on the importance of *Hygeia* in health education.—Dr. W. W. Bauer, director of the Bureau of Health Education of the American Medical Association, was speaker November 28 at a meeting of the auxiliary to the Irving Park Branch of the Chicago Medical Society.

Michigan

Mrs. Ralph G. Cook was elected president of the auxiliary to the Kalamazoo County Medical Society in Kalamazoo October 12.—Mrs. Alexander M. Campbell was elected president of the auxiliary to the Kent County Medical Society in Grand Rapids October 11. Speakers on the program were Mrs. O. H. Gillett, Dr. Luther Carpenter and Rabbi Jerome Folkman. Eighty-five members attended the opening meeting of the auxiliary to the Saginaw County Medical Society held in Saginaw October 24. Speakers were officers of the auxiliary to the Michigan State Medical Society.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Public Health Conference.—The state board of health held its annual conference in Little Rock December 11-12. Among the speakers were Drs. Jesse D. Riley, State Sanatorium, on "Public Health Aspects in the Control of Tuberculosis"; Leroy L. Fatherree, Little Rock, "The Typhoid Carrier"; The Epidemiologic Aspects"; James Q. Blackwood Jr., Helena, "Clinical Management of Syphilis," and James F. Hays, Russellville, "Present Day Knowledge of the Active Immunizing Agents of Diphtheria."

Society News.—The Ouachita County Medical Society was addressed in Camden December 14 by Drs. Barnett P. Briggs and Raymond L. Gregory, Little Rock, on "Management of the Premature Infant" and "Coronary Artery Disease" respectively. At a meeting of the Independence County Medical Society December 11 the speakers were Drs. Wesley J. Ketz on "The Prostate and the Kidneys"; Finis Q. Wyatt, "Osteomyelitis," and Oscar J. T. Johnston, "Knife Blade in the Skull." All are from Batesville. Dr. Ira F. Jones discussed "The Management of Postpartum Hemorrhage" before the Sebastian County Medical Society, Fort Smith, December 12. Dr. Jesse D. Riley, State Sanatorium, addressed the Garland County Medical Society December 12 on "The Early Diagnosis of Tuberculosis."

CALIFORNIA

Course on Ophthalmology and Otolaryngology.—The ninth annual midwinter course sponsored by the Research Study Club of Los Angeles was held January 15-26. Included among those participating were Drs. Harold G. Tobey, Boston; George L. Tobey Jr., Boston; William J. McNally, Montreal, Quebec; Albert D. Ruedemann, Cleveland; Algernon B. Reese, New York; Edward Jackson, Denver; John F. Barnhill, emeritus professor of surgery of the head, Indiana University School of Medicine, Indianapolis; Meyer Wiener, St. Louis; Simon Jesberg, Augustus G. Pohlman and Louis K. Guggenheim, Los Angeles; Norman A. Watson, Ph.D., and Vern O. Knudsen, Ph.D., both of Los Angeles.

Society News.—Dr. Albert H. Elliott Jr., Santa Barbara, addressed the Hollywood Academy of Medicine January 11 on "The Pathologic Physiology of Dehydration." A symposium on venereal diseases was presented before the Alameda County Medical Association in Oakland January 15 by Drs. Frederick C. Novy Jr., Leon I. Oppenheimer, Herman V. Allington, Ervin H. Epstein and Charles J. Lunsford. All are from Oakland. At a meeting December 18 the speakers were Drs. Harry J. Templeton and William H. Sargent, Oakland, on "Actinomycosis"; Roscoe G. Van Nuys and Robert O. Moody, Berkeley, "The Position and Mobility of the Kidneys in Healthy Young Men and Women," and Walter L. Voegtlin, Seattle, "Treatment of Alcoholism by the Conditioned Reflex Method."

COLORADO

Midwinter Postgraduate Clinics.—The seventh annual midwinter postgraduate clinics of the Colorado State Medical Society will be held at the Shirley-Savoy Hotel, Denver, February 7-9. Guest speakers will include:

- Dr. Paul C. Colonna, Oklahoma City, The Painful Hip in Children, with Differential Diagnosis.
- Dr. Joseph Brennemann, Chicago, Upper Respiratory Infections in Children.
- Dr. Alfred I. Folsom, Dallas, Texas, Bladder Irritation in Women.
- Dr. Lowell S. Goin, Los Angeles, A New Method of Treating Certain Types of Cancer of the Bladder.
- Dr. Michael L. Mason, Chicago, Principles of Management of Hand Infections.
- Dr. Cyrus C. Sturgis, Ann Arbor, Mich., Present Status of Our Knowledge Concerning the Treatment of the Anemias.
- Dr. Earl C. Saxe, Omaha, Interesting Experiences in Obstetrics.
- Dr. John M. Hargreaves, Randolph Field, Texas, Ophthalmologic Requirements for Military Aviation.

Clinics will be conducted by the guest speakers as well as by Colorado physicians. A symposium on arthritis will be presented by Drs. Sturgis, Mason, Colonna, Brennemann, Goin and Saxe. Entertainment will include a smoker, luncheons and a dinner dance.

GEORGIA

Dr. Elkin Appointed Professor of Surgery.—Dr. Daniel C. Elkin, professor of surgery, Emory University School of Medicine, Atlanta, has been named Joseph B. Whitehead professor of surgery at the school. The appointment fills a position recently created under a grant of \$250,000 from the Joseph B. Whitehead Foundation of Atlanta. Under the terms of the grant, the income derived from the \$250,000 will be expended to support both teaching and research activities connected with the new professorship. Dr. Elkin, a native of Kentucky, graduated at Emory University School of Medicine in 1920 and joined the faculty in 1923.

Graduate Assembly.—The third annual Atlanta Graduate Medical Assembly was held January 15 at the Biltmore Hotel, under the auspices of the Fulton County Medical Society. The speakers included:

- Dr. William J. Dieckmann, Chicago, The Treatment of Eclampsia.
- Dr. Joseph Earle Moore, Baltimore, Unsolved Problems in Syphilis.
- Dr. Philip Lewin, Chicago, Low Back Pain.
- Dr. Alexis F. Hartmann, St. Louis, Studies in Acid Base Balance.
- Dr. Philip S. Hench, Rochester, Minn., Chronic Infectious (Atrophic) Arthritis; Its Diagnosis and Treatment.
- Dr. Watt W. Eagle, Durham, N. C., Sphenopalatine Neuralgia.
- Dr. Alfred Blalock, Nashville, Tenn., Shock.
- Dr. William E. Chamberlain, Philadelphia, Pitfalls in X-Ray Diagnosis.
- David L. Thomson, Ph.D., Montreal, Canada, Sex Hormones and Their Therapeutic Uses.
- Dr. Stanford W. Mulholland, Philadelphia, Hypertension—The Problem, the Study, the Future.
- Dr. Cyrus C. Sturgis, Ann Arbor, Mich., The Prognosis and Treatment of Hypertension.
- Dr. George J. Heuer, New York, Treatment of Pulmonary Abscess.
- Dr. Clarence B. Farrar, Toronto, Canada, Psychiatric Problems in Daily Practice.
- Dr. Marion A. Blankenhorn, Cincinnati, Deficiency Diseases in Office Practice.

INDIANA

Personal.—Dr. Paul Schmiedicke, Marinette, Wis., has been appointed attending physician in the student health department of Purdue University, Lafayette. Dr. Arthur P. Echternacht, formerly of St. Louis, has been appointed roentgenologist at the Indiana University Medical Center, Indianapolis. Dr. Harold M. Trusler, assistant professor of surgery at the center, has been named visiting physician for the newly established department of constructive surgery at the Indianapolis City Hospital.

Society News.—At a meeting of the LaPorte County Medical Society, LaPorte, December 21, Dr. Carlo S. Scuderi, Chicago, discussed "Fractures of the Wrist." Among the speakers before the annual meeting of the St. Joseph County Medical Society, South Bend, recently, were Drs. Louis Rudolph, Chicago, on "Prolonged Labor"; Edgar F. Kiser, Indianapolis, "Common Errors in Diagnosis and Treatment of Cardiac Diseases"; Peter A. Rosi, Chicago, "Lesions of the Rectum," and Andrew C. Ivy, Chicago, vitamins. Dr. Harold M. Trusler, Indianapolis, addressed the Northeastern Indiana Academy of Medicine December 28 in Kendallville on "Treatment and Cure of Burns."

Annual Conference of Secretaries.—The Indiana State Medical Association held its annual conference of secretaries of the county medical societies at the Columbia Club, Indianapolis, January 21. The speakers were:

- Dr. Henry H. Turner, Oklahoma City, Postgraduate Medical Education in Oklahoma.
- Dr. Stephen J. Donovan, Michigan City, Attendance at Medical Society Meetings.
- Dr. Peter Irving, New York, Hospital Insurance and Medical Indemnity.
- Dr. Albert M. Mitchell, Terre Haute, A Report on Hospital Insurance.
- Drs. Norman M. Beatty and Joseph William Wright, Indianapolis, Legislative Review and Discussion of H. B. 74.
- Dr. Eldridge M. Shanklin, Hammond, The Journal of the Indiana State Medical Association.
- Dr. Maynard A. Austin, Anderson.
- Dr. Cleon A. Nafe, Indianapolis, How the Executive Committee Functions.
- Mr. Albert Stump, Indianapolis, Legal Matters.

The principal speaker at the dinner was Senator James E. Murray, Butte, Mont., chairman of the senate subcommittee which is considering the Wagner Bill.

IOWA

Society News.—Dr. Paul Titus, Pittsburgh, will discuss "Recent Advances Made in Obstetrics" before the Linn County Medical Society, Cedar Rapids, February 12. Dr. Ralph M. Waters, Madison, Wis., discussed "The Dynamics of Respiration" before the society January 11. The Black Hawk County Medical Society and the Waterloo Dental Society were addressed December 5 by Dr. Edward H. Hatton, Chicago, on "Infection as Seen in the Tissues of the Mouth." At a

meeting of the Decatur County Medical Society in Decatur December 21 Drs. Leon Paul Forgrave, St. Joseph, Mo., spoke on "Arthritis from the Surgical Standpoint" and Winton T. Stacy, St. Joseph, Mo., "The Toxemias of Pregnancy."—The Fayette County Medical Society was addressed December 5 in West Union by Drs. Cluley C. Hall, Maynard, on "Use and Abuse of Narcotics" and Harry P. Moen, West Union, "Surgical Treatment of External Hemorrhoids."—Among others, Drs. Robert E. Britt, St. Louis, addressed the Lee County Medical Society in Fort Madison December 13 on "Psychosomatic Relationships in Constitutional Disease" and Alvin E. Vitt, St. Louis, "Use of Sulfanilamide on Genito-Urinary Infections."—At a meeting of the Marion County Medical Society in Knoxville December 14 Dr. Wendell M. Willett, Des Moines, spoke on "Fundamentals of Diagnosis and Treatment in Dermatology."

MARYLAND

Sulfapyridine and Pneumonia Serum Depots.—As a part of a campaign begun early in the fall against pneumonia, supplies of sulfapyridine and serum have been established in the twenty-three counties of the state. In addition, laboratory centers were established at Cumberland, Hagerstown, Frederick, Rockville, Hurllock, Salisbury and Baltimore. These units were also to be set up in Annapolis, Elkton and LaPlata, newspapers reported. The drugs were to be distributed free to indigent patients when requested by physicians and a slight charge was to be made to those who can afford to pay.

The De Lamar Lectures.—A series of lectures on medical care opened Tuesday afternoon January 9 under the De Lamar Foundation of the Johns Hopkins University School of Hygiene and Public Health. Dr. Nathan B. Van Etten, New York, President-Elect, American Medical Association, was the speaker on "Medical Care and the Medical Profession." Others in the series are:

- Dr. Edward S. Godfrey Jr., Albany, January 16, Medical Care in New York State.
- Isidore S. Falk, Ph.D., Chevy Chase, January 23, Health Insurance in Other Countries.
- Dr. Ralph C. Williams, Washington, D. C., January 30, The Medical Service Plan of the Farm Security Administration.
- Dr. Watson S. Rankin, February 6, Charlotte, N. C., The Hospital Program of the Duke Endowment.
- Mr. J. D. Colman, Baltimore, February 13, Voluntary Hospital Insurance.
- Dr. Kingsley Roberts, New York, February 20, Consumer Cooperative Medical Services.
- Nathan Sinai, Ph.D., Ann Arbor, Mich., February 27, Systems of Prepayment for Medical Care Operated by Physicians.

MASSACHUSETTS

Dr. Minot Honored.—Dr. George R. Minot, professor of medicine, Harvard Medical School, Boston, was awarded the Gordon Wilson Medal of the American Clinical and Climatological Association at its meeting in Saranac Lake, N. Y., recently. Dr. Minot delivered the Gordon Wilson Lecture at the meeting.

A Study of Normal Young Men.—In the second year of its study of normal young men, the department of hygiene of Harvard University has doubled the number of undergraduate subjects undergoing investigation as to physical and mental characteristics and social backgrounds. According to the *New York Times*, last year fifty-five students volunteered to participate in the study, which is financed by the William T. Grant Foundation. This year about 100 new men will be studied. Last year, ten specialists in psychology, anthropology, physiology, medicine and sociology held 1,100 interviews with these students, averaging about eighteen hours for each person. Besides physical examinations, the students underwent intelligence tests. A similar study is under way in the fatigue laboratory, where the object is to learn the physiologic changes occasioned by work and muscular exercise and by variations in environmental conditions. Dr. Arlie V. Bock, Cambridge, who is in charge of the hygiene department investigation, stated that the care of the sick may be construed as a negative attack, while the study of the well should be a positive one, and should yield results that may point the way to the solution of many difficulties.

MICHIGAN

University News.—Dr. Eugene M. K. Geiling, professor and chairman of the department of pharmacology, School of Medicine of the Division of Biological Sciences, University of Chicago, lectured at the University of Michigan Medical School, Ann Arbor, November 30 on "Comparative Anatomy and Pharmacology of the Pituitary Gland."

Personal.—Mrs. Sarah Burgess, librarian at the Hurley Hospital, Flint, has been appointed to the newly created position of executive secretary of the Genesee County Medical Society.—Dr. Herbert E. Randall, Flint, was honored December 21 when more than a hundred friends and colleagues assembled to acknowledge his many years of service to Hurley Hospital.

Society News.—Dr. Arthur C. Curtis, Ann Arbor, discussed "Uses, Action, Toxic Effects of Neoprontosil, Sulfanilamide, Sulfapyridine" before the Washtenaw County Medical Society, Ann Arbor, January 9.—At a meeting of the Kalamazoo Academy of Medicine December 19 Dr. Ralph B. Fast spoke on "Physiology of the Larynx Illustrated with High-Speed Movies of the Larynx in All Its Functions," and Dr. Paul W. Harrison, "Medicine in Arabia." Both speakers are from Kalamazoo.—Dr. Marion A. Blankenhorn, Cincinnati, discussed "The Chemotherapy of Lobar Pneumonia" before the Wayne County Medical Society, Detroit, January 8.—The Detroit Society of Neurology and Psychiatry was addressed January 11 by Drs. Theophil Klingmann, Ann Arbor, on "The Physical Basis of Schizophrenia" and Lowell S. Selling, Detroit, "Results of Therapy in Cases of Sex Deviation."

MINNESOTA

Dr. Myers Honored in Puerto Rico.—Dr. Jay Arthur Myers, professor of medicine, preventive medicine and public health, University of Minnesota Medical School, Minneapolis, was awarded the 1939 gold medal of the Society of Puerto Rican Tuberculosis Physicians "for outstanding work in the field of tuberculosis." Dr. Myers gave a series of lectures in Puerto Rico early in December under the auspices of the society and addressed the annual session of the Puerto Rico Medical Association.

Courses at Center for Continuation Study.—*Minnesota Medicine* announces the winter program at the Center for Continuation Study, University of Minnesota. The schedule opened with a course on hospital administration January 15-20; one will open on dietetics January 29-31. Others in the series include:

- Problems of Newborn and Premature Infants, February 8-10.
- Proctology, February 12-17.
- Diagnostic Roentgenology, February 12-17.
- Otolaryngology, February 19-24.
- Medical Social Service, February 29-March 2.
- Physical Therapy Technology, March 4-6.
- Surgery, March 11-16.

Special teachers have been appointed for the courses, including Drs. Albert C. Furstenberg, Ann Arbor, Mich.; Cheralier L. Jackson, Philadelphia; Dean M. Lierle, Iowa City; Philip E. Meltzer, Boston; George E. Shambaugh Jr., Chicago, and Edward D. Churchill, Boston.

Society News.—Dr. Russell M. Wilder, Rochester, was elected president of the Minnesota Society of Internal Medicine at a recent meeting, succeeding Dr. Moses Barron, Minneapolis. Dr. Max H. Hoffman, St. Paul, was chosen vice president and Dr. Reuben A. Johnson, Minneapolis, secretary-treasurer.—The Minneapolis Surgical Society was addressed January 4 by Drs. Charles E. Merkert on "Abdominal Pain and Ileus Due to Ureteral Constriction"; Ernest R. Anderson, "Fracture of the Spine of the Tibia"; William R. Jones and Ralph H. Creighton, "Intussusception in Adult," and Herman O. McPheeters, "Padgett's Dermatomy and Split Grafts." The society will be addressed at its eighteenth annual dinner by Dr. Sumner L. S. Koch, Chicago, February 1 on plastic surgery.—At a meeting of the Hennepin County Medical Society January 31 Dr. Hugh R. Butt, Rochester, will speak on "Recent Advances in the Knowledge of Vitamins and Their Clinical Application." Dr. Everett C. Hartley, St. Paul, addressed the society January 24 on "Obstetric Treatment Predetermined by X-Ray Diagnosis."

MISSISSIPPI

New Professor of Anatomy.—Dr. David S. Pankratz, assistant professor of anatomy, histology and embryology, University of Tennessee College of Medicine, Memphis, has been appointed professor of gross anatomy at the University of Mississippi School of Medicine, University. He succeeds Dr. Archibald R. Buchanan, who resigned to take a similar position at the University of Colorado School of Medicine, Denver.

Society News.—The Northeast Mississippi Thirteen Counties Medical Society was addressed at Tupelo December 12 by Drs. William A. Evans, Aberdeen, on "Treatment of the"

Pneumonias"; Harvey F. Garrison, Jackson, "Treatment of Pneumonia in Infants and Children"; John W. Williams, Greenville, "Acute Pelvic Appendicitis," and Robert L. Sanders, Memphis, Tenn., "Diagnosis and Surgical Management of the More Common Lesions of the Colon."

NEBRASKA

Society News.—Dr. Buford G. Hamilton, Kansas City, Mo., addressed the Omaha-Douglas County Medical Society January 9 on "Problems Associated with Breast Feedings." Drs. Charles Edward Thompson and Maine C. Andersen, Omaha, addressed the society December 14 on "Theoretical and Practical Application of the Electrocardiograph."

District Meeting.—The Third Councilor District Medical Society met at Humboldt recently with the following speakers, among others: Drs. Richard H. Young, Omaha, "Differentiation of the Neuroses from Organic Disease"; Everett E. D. Angle, Lincoln, "Transurethral Resection of the Prostate for Obstruction," and John Jay Keegan, Omaha, "Low Back Pain and Sciatica Caused by Intervertebral Disk Protrusion." Dr. Arthur L. Miller, Kimball, president of the state association, discussed "The Government in Medicine," and Dr. Clayton F. Andrews, Lincoln, president-elect, "The Benefits of Organized Medicine."

NEW JERSEY

Public Lectures.—A feature of a medical exhibit to be presented for the public by the Essex County Medical Society at the Mosque Theater Building, Newark, February 5-10 will be a series of lectures each evening. The speakers announced are:

- Dr. Howard W. Haggard, New Haven, Conn., Progress in Medicine, February 5.
- Dr. Grant Thorburn, New York, Tuberculosis, February 6.
- Dr. Charles Hendee Smith, New York, Care of Preschool Children, February 7.
- Dr. Paul Padgett, Baltimore, Syphilis, February 8.
- Dr. Harrison S. Martland, Newark, and Inspector E. P. Coffey of the Federal Bureau of Investigation, February 9, Accidental Deaths and Crime Detection by Laboratory Methods.

Exhibits on thirty-three scientific subjects have been prepared and three pharmaceutical houses are participating.

NEW YORK

Campaign for Poliomyelitis Funds.—Governor Lehman issued a proclamation January 14 designating January as "Poliomyelitis Campaign Month" and called on the public to support the organized campaign now conducting its annual drive for funds. The governor pointed out that the people of New York had been "painfully reminded of the still unconquered hostility of poliomyelitis" during the past year and acknowledged aid received from the National Foundation for Infantile Paralysis, which carries on the fight against the disease with funds received from the Committee for the Celebration of the President's Birthday.

Cancer Now Reportable.—Reporting of cancer cases to the state department of health was begun January 1 under a law passed in 1939. The law requires that cases be reported by every physician who sees a case of cancer or other malignant tumor; every hospital, dispensary or related institution to which such a case is admitted and every laboratory in which a tissue diagnosis of cancer or other malignant tumor is made. It is believed that reporting will make available data that will be of value in the control program, such as whether or not cancer is actually increasing, in what sections and among what groups it is most prevalent.

Society News.—Dr. C. Charles Burlingame, Hartford, Conn., addressed the Dutchess County Medical Society, Poughkeepsie, January 10 on "Psychiatry—the Cinderella of Medicine."—Dr. Leon E. Sutton addressed the Onondaga County Medical Society, Syracuse, January 2 on "Early Local Care of Traumatic Wounds, Stressing Wounds of the Face."—Dr. Charles F. Geschickter, Baltimore, addressed the Warren County Medical Society, Glens Falls, recently on "Malignancies of the Breast."—Dr. Stuart B. Blakely addressed the Broome County Medical Society, Binghamton, January 9 on "The Psychology of Pregnancy."—At a meeting of the Ontario County Medical Society in Canandaigua January 9 the speakers were Dr. Albert M. Crance, Geneva, on "Factors of Importance in the Modern Treatment of Syphilis" and Frank Maltaner, Ph.D., Albany, "The Quantitative Complement-Fixation Test for Syphilis."

New York City

Gifts to Columbia.—The John and Mary R. Markle Foundation recently donated \$9,500 to Columbia University, \$6,000 of which will support studies on the chemistry of senescence and of arteriosclerosis and \$3,500, an investigation of nonpellagrous dermatitis controlled by the vitamin B complex. Other recent gifts include:

Florida Citrus Commission, \$5,000 for research on the nutritional aspects of citrus fruits.

Estate of Dr. Francis I. Proctor, \$2,000 for studies on the application of keratoplasty to trachoma and various amounts for other purposes, making a total of \$3,154.60.

Oberlander Trust, \$2,000; Kohut Fund, \$1,500; Emergency Committee in Aid of Displaced Foreign Medical Scientists, \$2,000 toward salaries in the department of public health practice.

Selecting the Staff for Tuberculosis Hospital.—Dr. Sigismund S. Goldwater, commissioner of hospitals, has appointed a committee to assist in the selection of a medical staff for the new 500 bed hospital for tuberculosis soon to be completed. Dr. Robert F. Loeb is chairman of the committee and members are Drs. Frank N. Dealy, Jamaica; Robert E. Plunkett, Troy; I. Ogden Woodruff and Carl Eggers. Applicants must be citizens of the United States and must be physicians in good ethical standing licensed to practice in New York. The medical superintendent, pathologist and roentgenologist will be appointed from civil service lists. Applicants for appointment to the honorary visiting staff are asked to submit their applications to the chairman of the committee or to the commissioner of hospitals.

NORTH CAROLINA

Society News.—Dr. Robert C. Bunts, Asheville, addressed the Buncombe County Medical Society, Asheville, January 22 on "Congenital Obstruction of the Bladder Neck."—At a meeting of the Catawba Valley Medical Society in Newton January 12 the speakers were Drs. Edwin C. Hamblen, Durham, on endocrine therapy; Verling K. Hart, Charlotte, "Use of the Bronchoscope, Exclusive of Its Use for Removal of Foreign Bodies," and Judge Wilson Warlick, Newton, "Medical Jurisprudence."—Dr. Dickinson Sergeant Pepper, Philadelphia, addressed the Mecklenburg County Medical Society, Charlotte, December 5 on "Treatment of Pneumonia with Sulfapyridine."

Antenatal Syphilis Tests Required.—A new law requiring pregnant women to submit to a blood test for syphilis went into effect in North Carolina January 1. The law provides that any duly licensed physician shall on request of the woman take the blood sample and submit it to an approved laboratory. Midwives may not take the samples but must refer their patients to a licensed physician. When a pregnant woman is not able to pay a physician she may have a sample taken by the county health officer or the county physician. In reporting births and stillbirths physicians shall be required to state whether such serologic tests have been made during pregnancy, this information to appear on the certificate. Violation of the law carries a fine of \$25, imprisonment for thirty days or both, in the discretion of the court.

OHIO

Dr. Dunham Resigns as Sanatorium Head.—Dr. Henry Kennon Dunham, Cincinnati, medical director of the Hamilton County Tuberculosis Sanatorium for many years, has resigned, according to newspaper reports, and Dr. John H. Skavlem has been appointed acting medical director. Dr. Dunham has been with the sanatorium since 1910 and Dr. Skavlem has been associated with him since 1921.

Society News.—Dr. Gabriel Tucker, Philadelphia, will address the Mahoning County Medical Society, Youngstown, February 20 on "Diseases of the Larynx and Trachea."—Dr. Ralph M. Waters, Madison, Wis., addressed the Stark County Medical Society, Canton, December 14 on "Relation of Pain Relieving Drugs to Pulmonary Morbidity."—Dr. Paul C. Colegrove, Oberlin, addressed the Lorain County Medical Society, Lorain, December 13 on "Subacute Bacterial Endocarditis."

Annual Series of Free Lectures.—The tenth annual series of free public health lectures sponsored by the Academy of Medicine of Cleveland, the Albert Fairchild Holden Foundation of Western Reserve University and the Cleveland Medical Library Association at the Allen Memorial Medical Library Auditorium will begin February 11. Dr. Harry C. Rosenberger will give the first lecture on "Sense and Nonsense About

Sinuses." The second will be given February 25 by Dr. Charles E. Kinney on "Conserving Your Hearing" and the third March 10 by Dr. Paul G. Moore on "The Changing Eye."

Dr. Follansbee Honored.—Dr. George E. Follansbee, Cleveland, chairman of the Judicial Council of the American Medical Association, has been made an honorary member of the Academy of Medicine of Cleveland, in recognition of his long service to the academy and to organized medicine. Dr. Follansbee served as a trustee and in various other capacities in the academy for many years and was president in 1918. Among other activities he has been president of the Ohio State Medical Association and of the Cleveland Medical Library Association. For several years he was a member of the House of Delegates of the American Medical Association, has been a member of the Judicial Council for fourteen years and chairman for eleven years.

PENNSYLVANIA

Hospital Superintendent Appointed.—Dr. Ira A. Darling, superintendent of the Springfield State Hospital, Sykesville, Md., has been appointed superintendent of the Torrance State Hospital, effective January 15. He succeeds Dr. John I. Wiseman, acting superintendent, who was not a candidate for reappointment, according to the *Pennsylvania Medical Journal*. Before going to Maryland, Dr. Darling was on the staff of the Warren State Hospital for many years.

Society News.—Dr. Walter I. Lillie, Philadelphia, addressed the Lycoming County Medical Society, Williamsport, January 12 on "The Fundamental Changes in Arterial Hypertension."—Dr. Temple S. Fay, Philadelphia, was the guest speaker at a meeting of the York County Medical Society, York, January 11 on "Why Do We Laugh?"—Drs. Chauncey L. Palmer, Pittsburgh, and James L. Whitehill, Beaver, discussed the Medical Service Association of Pennsylvania at a meeting of the Westmoreland County Medical Society at the Mountain View Hotel near Greensburg January 16, among other speakers.

Philadelphia

Society News.—A symposium on endocrinology was presented before the Philadelphia County Medical Society January 10 by Dr. Emil Novak, Baltimore; Joseph A. Morrell, Ph.D., New Brunswick, N. J., and Dr. Edward Rose.—The Medical League of Philadelphia heard a symposium on arthritis January 8 presented by Drs. Ralph J. Melman, Abraham M. Rechtman and Mitchell Bernstein.—Dr. Barton R. Young, among others, addressed the Philadelphia Laryngological Society January 9 on "Recent Advances in Roentgen Ray Examination of the Larynx with Special Reference to Body Section Roentgenography."—Drs. Chevalier L. Jackson and George S. McReynolds Jr., among others, addressed the Laennec Society of Philadelphia January 9 on "Neoplastic and Non-Neoplastic Diseases of the Bronchi in Relation to the Anatomical Bronchopulmonary Segments."—Among the speakers before the Pathological Society of Philadelphia January 11 were Drs. Robert F. Norris and Leon Herman on "The Pathogenesis of Polycystic Kidneys" and Jacob W. Cutler, "A Scientific Method for Recording Erythrocyte Sedimentation Rate."

RHODE ISLAND

Society News.—Dr. Charles P. Fitzpatrick, Howard, addressed the Providence Medical Association January 8 on "A State Hospital Physician Views Community Health in Rhode Island."—Dr. Hugh E. Kiene, Providence, addressed the Pawtucket Medical Association January 18 on "New Developments in Psychiatry."

Residencies in Psychiatry.—A two year term of study and research in psychiatry and neurology has been arranged by the educational advisory committee to the state department of social welfare, according to an announcement. Residencies will be granted to young physicians desiring to specialize, one year to be spent at the State Hospital for Mental Diseases, Howard, and one year at Butler Hospital, Providence, including three months at the Bradley Home for work with children. The residents will be entered as graduate students at Brown University and will receive academic credit. Dr. Charles P. Fitzpatrick, superintendent of the state hospital, is chairman of the committee and members are Drs. Arthur H. Ruggles, medical director, and Ira C. Nichols, acting clinical director of Butler Hospital; Charles Bradley, medical director of the Emma Pendleton Bradley Home, East Providence, and Harold W. Williams, clinical director at the state hospital.

TENNESSEE

Personal.—Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, delivered the Eastman Memorial Lecture at the University of Rochester School of Medicine, Rochester, N. Y., December 12 on "A Consideration of Pathogenesis in Virus and Bacterial Infections."

Society News.—At a meeting of the Dyer, Lake and Crockett Counties Medical Society in Dyersburg January 3 the speakers, all of Dyersburg, were Drs. Percy A. Conyers, on acute conditions in the ear; Jesse Paul Baird, mortality in acute appendicitis, and William E. Anderson, treatment of pneumonia.

VIRGINIA

Postgraduate Course in Specialties.—The University of Virginia Department of Medicine held its sixth annual postgraduate course in ophthalmology and otolaryngology December 5-8. Lecturers and clinicians were: Drs. Edmund B. Spaeth, Wilfred E. Fry, Alfred Cowan and James A. Babbitt, all of Philadelphia; William Thornwall Davis, Washington, D. C.; Charles D. Blassingame, Memphis, Tenn.; Edwin N. Broyles, Baltimore; Oscar Swineford Jr. and Henry B. Mulholland, Charlottesville.

Portrait of Dr. Gray.—A portrait of Dr. Alfred L. Gray, late professor of roentgenology and formerly dean at the Medical College of Virginia, Richmond, was presented to the college December 15 by Mrs. Malcolm W. Perkins, a niece of Dr. Gray. Drs. Thomas W. Murrell and William Lowndes Peple, Richmond, were the speakers at the ceremonies. Dr. Gray, who died Oct. 13, 1932, was associated with the college and with the old University College of Medicine for many years as dean of the latter, professor of physiology and professor of roentgenology.

WEST VIRGINIA

Personal.—Dr. Donald L. Butterfield, Charleston, director of medical service for the West Virginia Department of Public Assistance, has resigned that office to accept a position as mine physician at Milburn.

Society News.—Dr. Frederick R. Whittlesey, Morgantown, addressed the Barbour-Randolph-Tucker County Medical Society, Philippi, December 21 on treatment of pneumonia.—Drs. Pat A. Tuckwiller and Archibald P. Hudgins, Charleston, addressed the Boone County Medical Society, Madison, December 14 on "Diagnosis and Treatment of Anemias" and "Leukorrheas of Pregnancy" respectively.—Dr. William Carl Kappes, Huntington, addressed the Cabell County Medical Society, Huntington, December 14 on "Nodular Goiter."—Dr. Victor W. Fischback, Cincinnati, discussed "Nasal Infections" at a meeting of the Kanawha Medical Society, Charleston, in December.

PHILIPPINE ISLANDS

Society News.—A symposium on pulmonary tuberculosis was held at the Naval Hospital, Canacao, December 1, with the staffs of Sternberg Hospital (U. S. Army) and Quezon Institute as guests. Dr. Miguel Canizares delivered a paper on "Surgical Treatment of Pulmonary Tuberculosis," which was discussed by Capt. Joseph J. A. McMullin, U. S. Navy, Col. Adam E. Schlanser, U. S. Army, and Comdr. John P. Owen, U. S. Navy.

PUERTO RICO

Institute on Tuberculosis.—The bureau of tuberculosis of the department of health of Puerto Rico held an institute on tuberculosis Nov. 23-26, 1939, in Rio Piedras. On the program were symposiums on bilateral pneumothorax, treatment of complications of artificial pneumothorax and the cooperation of the medical association in the antituberculosis campaign. Among other speakers were:

Dr. David E. Garcia, Rio Piedras, Drugs in the Modern Treatment of Tuberculosis.
Dr. Oscar G. Costa-Mandry, San Juan, Bacteriology of Tuberculosis.
Dr. Jacobo Simonet, San Juan, Differential Diagnosis of Diseases of the Chest.
Dr. Jerome S. Peterson, San Juan, Trends in Tuberculosis Mortality and Morbidity with Special Emphasis on Puerto Rico.
Dr. Jose Rodriguez Pastor, San Juan, What the Public Should Know About the Treatment and Diagnosis of Tuberculosis.

GENERAL

Social Hygiene Day.—February 1 will be observed as the fourth National Social Hygiene Day, sponsored by the American Social Hygiene Association and the National Anti-Syphilis Committee. Meetings of various types have been planned around the slogan "Now More Than Ever—Guard Against Syphilis." A feature of the observances will be showings of the new film "With These Weapons."

Directory of Medical Specialists.—Issuance of the Directory of Medical Specialists Certified by American Boards has been set for February 15. It was originally planned for December 1938. The delay enables the Advisory Board for Medical Specialties to include the names of men certified during the late months of 1939 and thus have the lists complete up to January 1 of this year. Dr. Paul Titus, Pittsburgh, secretary of the advisory board, is in charge of the publication.

Red Cross Classic Published in English.—The American Red Cross announces that "Un Souvenir de Solferino," by Henri Dunant, the eyewitness account of the battle of Solferino in 1859 which is credited as one of the factors in the founding of the Red Cross, has been published in its first complete English edition. The translation was published in December as part of the observance of the seventy-fifth anniversary of the Red Cross. Dunant's experience in the battle inspired him to work toward formation of a neutral organization to reduce the sufferings of war. His account was originally published in 1862 and two years later sixteen European nations signed the Treaty of Geneva establishing an international Red Cross.

Bacteriology Award to Dr. Kidd.—At the annual meeting of the Society of American Bacteriologists in New Haven December 28-30, the Eli Lilly Award of a medal and \$1,000 was presented to Dr. John G. Kidd of the Rockefeller Institute for Medical Research, New York. The award is made to a young man or woman under 31 years of age for outstanding contributions to bacteriology or immunology. Dr. Kidd, who has been a research assistant at the institute since 1934, received the honor for original work on animal tumors of virus etiology. He graduated from Johns Hopkins University School of Medicine in 1932. Charles Thom, Ph.D., of the U. S. Department of Agriculture, Washington, D. C., was elected president of the society; Dr. Oswald T. Avery, New York, vice president, and Ira L. Baldwin, Ph.D., Madison, Wis., secretary.

Theobald Smith Award to Dr. Sabin.—At the midwinter meeting of the American Association for the Advancement of Science in Columbus, Ohio, the Theobald Smith Award was presented to Dr. Albert B. Sabin, who recently went from the Rockefeller Institute for Medical Research, New York, to the University of Cincinnati College of Medicine. Dr. Walter B. Cannon, Boston, president of the association, made the presentation and Dr. Sabin described his research in a paper entitled "Constitutional Barriers to Involvement of the Nervous System by Certain Viruses." A native of Poland, Dr. Sabin is 33 years old and graduated from New York University College of Medicine in 1931. He was on the staff of the Rockefeller Institute from 1935 until his recent appointment as associate professor of pediatrics at the University of Cincinnati College of Medicine.

Surgical Meeting in Florida.—The fifth assembly of the United States Chapter of the International College of Surgeons will be held February 11-14 at Venice, Fla. The program includes a symposium on venom therapy to be presented by Drs. Thomas F. Wheeldon, Richmond, Va., and Paul T. Butler, Orlando, Fla.; Eugene Maier, Ph.D., Venice, and "Texas Jim" Mitchell, Sarasota, Fla. Among other speakers will be:

Dr. Temple S. Fay, Philadelphia, Refrigeration in Human Beings and Its Effect on Undifferentiated Cells, Particularly Related to Cancer.
Dr. Alberto Inclan, Havana, Cuba, Surgical Treatment of Giant Cell Tumors of Bones.

Dr. William E. Lower, Cleveland, Indications for and the Results of Ureteral Transplantation into the Rectosigmoid.
Bradley M. Patten, Ph.D., Ann Arbor, Mich., Microcinematographic and Electrocardiographic Studies of the First Heart Beats and the Beginning of the Circulation in Living Embryos.

Dr. Rudolph Nissen, Istanbul, Turkey, Reconstruction of the Ureter.
Dr. Edward J. McCormick, Toledo, Ohio, Present Social and Economic Trends and the Future of Surgery.

Fraudulent Salesmen.—A salesman who claimed to represent the "Paramount Uniform Company, 1238 North Meridian Street, Indianapolis," recently took an order for uniforms in the office of a physician in Lexington, Ky. A small deposit was paid, but the order was never received. Inquiry from the Indianapolis board of commerce revealed that there was no such street number and the firm name was not known. It

was said that the Better Business Bureau of Indianapolis had received other letters concerning this man, who called himself Ross.—From Arkansas came a similar complaint. The salesman gave the name L. H. Ross and the firm name "Trencro Uniform Company, 87½ Hanover Street, Trenton, N. J." A deposit of \$4.65 was paid on an order of \$18.20. A letter of inquiry sent when the merchandise was not received was returned with the notations "Unknown," "Not at address given" and "Not in directory service."

LATIN AMERICA

Chilean Congress of Pediatrics.—The third National Congress of Pediatrics of Chile will be held at Viña del Mar February 2-4. Subjects to be discussed are: medicosocial assistance to the preschool and the school child; infantile encephalopathies; the acute abdomen in the child, and medico-surgical treatment of infantile tuberculosis.

CORRECTION

Vitamin A in the Blood.—In the article by Steinger, Roberts and Brenner in THE JOURNAL, Dec. 30, 1939, page 2381, in the last item in table 1, which refers to the article by Clausen and McCoord, the statement that the "rate of absorption of vitamin A is slower than that for carotene" should have been just the opposite, that is, that the "rate of absorption of carotene is slower than that for vitamin A."

In view of Marian S. Kimble's paper published in the *Journal of Laboratory and Clinical Medicine* in July 1939, attention has been called to the following statement in Steinger, Roberts and Brenner's paper: "With the exception of the work of Clausen and his associates, these studies have all been done in foreign countries." The authors state that the foregoing quotation was correct at the time their paper was submitted to THE JOURNAL.

Government Services

Internships in Public Health Service Hospitals

The United States Public Health Service announces that applications will be received for appointments as second year interns. Those eligible are physicians not over 30 years old who have graduated from accredited medical colleges and who have or will have completed by next June one year's internship at an approved hospital. Appointments will be offered immediately to be effective on or shortly after July 1 or sooner if vacancies exist and applicants are available. No written examination is required. It is especially desired to receive applications from physicians who are interested in the public health service as a career. Appointments will be made with the understanding that an opportunity will be afforded to take the next examination provided for by regulations for appointments as assistant surgeon. Persons desiring to make application should communicate at once with the Surgeon General, U. S. Public Health Service, Washington, D. C.

Commissions in Medical Corps of Navy

Applications for commissions as medical officers in the U. S. Navy are now being received in the bureau of medicine and surgery, navy department. Examination for entrance will be held during the first week of May at the naval hospitals in Boston, Brooklyn, Philadelphia, Norfolk, Va., San Diego, Calif., and Mare Island, Calif., and at the Naval Medical Center, Washington, D. C. Applicants are required to be citizens of the United States between 21 and 32 years of age at the time of appointment, graduates of recognized medical schools and physically qualified. They must demonstrate their professional qualifications by written, oral and practical examinations embracing the subjects of general medicine, general surgery, obstetrics and gynecology, preventive medicine and jurisprudence. The physical and professional examinations usually require from three to four days for completion. Successful candidates are commissioned as assistant surgeons with the rank of lieutenant (junior grade) in the medical corps of the navy. An officer of this rank receives compensation of \$2,699 a year if he has no dependents and \$3,158 a year if he has dependents. A "Circular for the Information of Persons Desiring to Enter the Medical Corps of the United States Navy," including data pertaining to physical requirements, promotion, retirement and other matters, may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 30, 1939.

The Earliest Example of Canned Food

In the Museum of the Royal United Service Institution, London, is a glass tube containing roast veal taken from a can more than a hundred years old. The can, cut round with chisel and hammer, is also on view and is the earliest known example of canned food. It formed part of the stores taken by Sir William Parry in his arctic expedition of 1824 and was brought back unused. At the request of the International Research and Development Council, the museum sanctioned the opening of the can, so that a chemical and bacteriologic examination might be made of its contents. No trace of preservatives was found. The contents were found in perfect condition. Some of the meat was given without ill effects to a cat, and ten rats were fed on it for some days, providing a testimonial to its quality by putting on weight. Although a Frenchman invented the process of canning at the end of the eighteenth century, it was left to the English firm of Donkin & Hall to make practical use of his discovery. They set up in business in 1811 and two years later their products were being used by the navy and army. In 1814 Sir Joseph Banks, president of the Royal Society, wrote in praise of the nutritious qualities of their "embalmed provisions." In this year also the firm supplied the expedition to Baffin's Bay, which Parry joined as a lieutenant. Five years later on his first voyage to discover the northwest passage, canned meat, soup and vegetables formed a valuable aid in combating scurvy.

Water Sold at Food Prices

In his recently published annual report, for 1938, Sir Arthur MacNalty, chief medical officer of the Ministry of Health, stated: "There is a general tendency to incorporate excess of moisture in food, particularly dairy products, and thus, in effect, to sell water at the price of food." He stresses the need for a system of food standards, which already exists for butter and margarine. In the case of compound foods there has always been a tendency to increase the amount of the cheaper ingredients gradually at the expense of the more costly ones. Probably the most flagrant cases of misleading labels concerns foods stated to have a high vitamin content. For almost all foods no legal standards exist, but the consumer has some protection under the Sale of Food and Drugs Act. A vender can be prosecuted for selling an article of food or drink which is not "of the nature, substance or quality demanded or for selling any article of food or drink which has been rendered injurious to health." But unfortunately the practices mentioned do not come within the purview of these acts.

The Hospitals in Wartime

The evacuation of the great hospitals in the cities for the safety of the patients and to make room for the large number of casualties expected from air raids has been described in previous letters. Such raids have not occurred but they remain possible and therefore the elaborate organization for dealing with them has to be kept ready. There were 6,334 beds in the twelve teaching hospitals of London when the war began. Of these, 2,450 are now reserved for casualties, 1,185 accommodate the sick and 2,699 are closed. These beds were closed because the minister of health decided that the patients could be treated in greater safety outside London. The evacuation of the hospitals has produced special difficulties. Thus at an inquest on a man who died from an accident in which his chest was crushed it was stated that fractures of the ribs could not be diagnosed

because the x-ray apparatus was not available. The surgical treatment of pulmonary tuberculosis has been interrupted because the special hospitals where the operations are performed have been deprived both of thoracic surgeons and of special instruments, while the outlying hospitals to which the removal has taken place are not yet in a position to receive the patients. There is a shortage of beds for nonpulmonary tuberculosis. Another ill result is that the teaching of medical students has suffered. The London hospitals have for generations been adapted to this purpose, but in the hospitals around London to which the students and the staff have been moved and over which they are scattered, the facilities for teaching are poor.

In a joint letter to the *Times*, the presidents of the Royal Colleges of Physicians, Surgeons and Obstetricians advocate the view that the sooner the London hospitals are put into commission the better. They admit that the beds reserved for the casualties of air raids must be kept empty, and segregated as far as possible and organized for their special service. But they have impressed on the minister of health the desirability of releasing for the service of the civilian sick a large number of the beds now closed as a precautionary measure. Anything like full recommissioning cannot take place until it is decided that the risk of extensive casualties from air raids is no longer to be feared.

Electroprexia in the Treatment of Disease

In opening a discussion at the Medical Society of London on induced pyrexia, Dr. F. J. Nattrass said that his principal experience with the method was in the treatment of dementia paralytica. The electrical method of producing pyrexia had great advantages over the malaria treatment. The fact that many different methods had proved effective suggested that the pyrexia was the essential element. It could no longer be contended that there was anything specific about malaria. He used a small radiant heat cabinet for the production of short waves, which had the advantage that a continuous record of the rectal temperature could be maintained. The published results appeared to show that the results with pyrexia produced by physical agents were superior to those produced by malaria: the patients were not made so ill, and the mortality was lower. In the treatment of dementia paralytica he had no death in 213 cases, while the mortality attributed to benign malaria, though seldom more than 3 or 4 per cent under organized arrangements, had otherwise been as high as 10 per cent.

The general principle was to persist until a maximum clinical response was obtained. His practice was to give from four to six fevers of 106 F., each for eight hours. This must be supplemented by full antisyphilitic treatment, especially with trypanamide and bismuth compounds, but it was dangerous to inject drugs during the height of the fever. The fever soon caused a fall in the cell count and protein of the cerebrospinal fluid, but the change in the Wassermann reaction and colloidal gold curve was very slow. A sedative should be given to keep the patient comfortable, and the water intake should be sufficient to compensate for the loss by sweating. Not all cases of dementia paralytica were suitable for electroprexia. The patient must be capable of cooperation or at least not be resistant. It might well be that malaria was still the method of choice for severely demented patients.

GONORRHEA AND OTHER DISEASES

Fever was more potent in generalized gonococcal infection than in primary gonorrhea. It was usually reserved for resistant cases, those with local extension in the male and female organs, and gonococcal arthritis. It probably had a lethal action on the gonococcus. The best results were obtained by temperatures near the limit of safety (106 F.), though lower temperatures might cure. The resistance of different strains of the gonococcus

varied. In 92 per cent of the cases, cures had been obtained with a single course of ten hours' fever, which was a practicable and safe routine.

Benefit from fever had been established and claimed in a number of other diseases. The physical signs of *tabes dorsalis* were not influenced, but symptomatic improvement was said to be marked if antisyphilitic treatment also was given. He had not, however, been impressed in twelve cases that he had treated. Neymann's results in syphilitic optic atrophy suggested a further trial. Gummatous cerebrospinal meningitis was amenable to pyrexia treatment though resistant to chemotherapy. But no case had been made for pyrexia treatment in early syphilis. Fifty per cent of remissions had been claimed in asthma; relapse was usual but remission could be repeated. In some cases of chorea, movements had been promptly checked and the total duration reduced. The presence of carditis did not contraindicate the treatment. But he doubted whether pyrexia was indicated in chorea, which responded so well to simpler measures.

PARIS

(From Our Regular Correspondent)

Dec. 16, 1939.

Center of Oxygen Therapy

Léon Binet was better qualified than any one else to create the center of oxygen therapy at the Hôpital Necker, where oxygen is not only available to the public but where a well equipped laboratory is found for the study of oxygen and all gases related to it. Binet has conducted for a long time experimental and therapeutic researches on oxygen, on anoxemia and the biologic reactions which it causes and on hyperoxygenation. The center will render important services if poison gas is used by enemy countries against the civilian population. It was founded chiefly for cardiac and pulmonary diseases and those of the respiratory organs. According to Binet, oxygen is the basic therapy for all dyspneas. Its therapeutic use requires perfect equipment, as in many cases perfect timing with the respiratory movements must be achieved. The apparatus must also be simple and without mechanical complications so that it can be used conveniently and without fatigue to the patient. For application of oxygen lasting from fifteen to twenty minutes an hour a tent is needed. For a still longer treatment a mask is employed which is open at the top and is made of a cellophane sheet covering the face. When artificial respiration is employed, a thoracic band which exerts compression and decompression enables exact synchronization between respiration and the arrival of the oxygen in the buccal mask. Another arrangement consists of an artificial lung which is portable and in sections and is an improvement over Drinker and Roy's because it introduces automatic alternation between the expansion of the thorax and the absorption of oxygen. Binet uses gaseous oxygen in preference to liquid oxygen. The latter has no special virtues to commend it, as it is ultimately converted into gas and, besides, furnishes a fire risk.

Professional Secrecy

In France the professional secret has been thus far an absolute medical obligation. The part of the Hippocratic Oath which prohibited the disclosure of a patient's secrets was regarded as the cornerstone of the confidential relations between physician and patient. In the past the physician was under obligation, for example, to state the cause of death as well as to report epidemic diseases. But, summoned into court, he could and had to refuse to answer questions relating to professional secrets involved. If he violated his obligation he could be prosecuted either by the public prosecutor or by interested persons. During the last few years, however, the rigid rule of professional secrecy has had to be relaxed, for reasons

of public policy, in two important aspects: first, in matters of criminal abortion, in which the physician may now reveal without reservations the facts known to him; secondly, in the prophylaxis against syphilis. Article 2 of a recent law provides that every physician who learns that a person of either sex afflicted with a contagious venereal disease has communicated this disease to one or more persons must report the facts to the health department. In such cases he may also give testimony in court. The law which requires the physician to report makes him a valuable assistant in the fight against venereal diseases. In medical circles these provisions of the law will be heatedly discussed until it is conceded that it is the first duty of a physician to suppress disease and that hence the traditional attitude of professional reserve needs to be abandoned in the interest of public health.

Criminal Abortions in France

The low French birth rate constitutes a serious danger to the preservation of the nation. The number of infants born alive, which amounted to 907,000 in 1886, had fallen to 630,000 fifty years later. In 1938 births (610,000) were fewer than deaths (650,000) by about 40,000. France is the only civilized country in which coffins are more numerous than cradles. Criminal abortion is undoubtedly one of the most important causes of this tragic situation. In 1905 Dolé Doléris pointed out that in the maternity wards of Paris there were more cases of self-provoked abortion than of confinement cases. Physicians and sociologists for a long time have been stressing this national peril and calling for laws against criminal abortion. The war of 1914 aggravated the situation. In 1923 the French parliament adopted the draft of a law elaborated by medical committees and other organizations, among which the National Alliance for the Growth of the French Population was prominent. The law of 1923 organized the supervision of maternity homes, many of which were no better than abortion factories masked under medical pretensions. The law prohibited contraceptive propaganda and provided that crimes of abortion no longer be decided by juries too often subject to emotional bias but be tried before judges. Greater severity was expected of professional magistrates than of sentimental juries. The French senate went so far as to read into the laws an exceptional provision in which full pardon was accorded to the defendant if she disclosed the author of the abortion. Moreover, the right of professional secrecy on the part of physicians, which in France practically possesses divine sanction, was revoked. However, these two provisions were abandoned. This weakened the effects of the law. On the other hand, the judges showed themselves too often as much inclined to leniency as were formerly the juries. In consequence, the number of those condemned and even those charged with the offense remained greatly out of proportion with that of abortions. Besides, in nine out of ten cases the penalty imposed did not exceed several months in prison.

Mazel and Robin, who have recently treated this subject in the *Journal de médecine de Lyon*, refrain from giving figures. However, everybody agrees that it is higher than the number of annual births, which amount to 600,000. Criminal abortion is found at all social levels and is from five to six times more frequent among married women than among unmarried. The third child in the family is usually the victim, clearly a proof of the economic implications of the situation. The disastrous effect of criminal abortions on the female genital organs cannot be exaggerated.

In the face of this serious situation, a law was decreed July 29, 1939, increasing the penalties against criminal abortion and intensifying action against physicians, midwives and others guilty of this practice. It minutely regulated the procedure in cases of therapeutic abortion. It granted the right

of direct summoning to the medical syndicates and the syndicates of midwives. It canceled the obligations of professional secrecy in matters of criminal abortion. It prohibited the sale of abortifacients except to pharmacists and reserved to authorized laboratories the biologic diagnosis of pregnancy. It vigorously combated the advertising of contraceptives and strengthened the control of maternity homes. However, the law balked at the provision previously adopted and abandoned which exempted from penalty women who disclosed the abortionist, fearing lest it might be abused for calumnious purposes. Revocation of this provision deprived physicians of the means of bringing abortionists to trial while protecting their clients. It is expected that the new law will save at least 100,000 lives. In order to make any real headway, however, permanent measures must be taken to protect and aid the mothers. Another law, instituting the family code, though still incomplete, aims at the improvement of the economic side of the situation.

Infant Mortality

Between 1925 and 1938 the infant mortality in France fell from 39.4 to 35 per thousand live births. The mortality rate during the first ten days of life fell from 18.7 to 16.3 per thousand in the course of the first year. In the course of the second year it fell from 18.6 to 13.9 per thousand. This decrease applies especially to the summer months. Gastroenteritis has decreased 84 per cent since 1906. On the other hand, diseases of the respiratory organs have receded since that time only by 17.1 per cent. According to Lesage and Moine, who presented these statistics to the Academy of Medicine, France loses every year more than 100,000 infants, about one third of all the births, through negligence all the more culpable in that the birth rate is declining. In the years from 1925 to 1938, France's birth rate fell from 19 to 14.6 per thousand.

Personals

The Académie de médecine has lost in Auguste Pettit, president of the Société de biologie of Paris, one of its most eminent members. It has nominated two new members: Jean Gautrelet, director of the health laboratory at the Ecole des hautes études, and Léon Babonneix. At the University of Paris, honorary degrees were conferred on Sir Humphry Rolleston, honorary professor at the University of Cambridge, and on Philippe Roy, who for many years represented Canada in Paris and who had started out in his own country as a rural physician.

BERLIN

(From Our Regular Correspondent)

Dec. 9, 1939.

The Treatment of Poliomyelitis with Convalescent Serum

According to a recent publication of the national health department, serum therapy in poliomyelitis is at present the only method that promises a measure of success. However, serum therapy is useless if paralysis has already set in. Professor Gildemeister of the Robert Koch Institute investigated the problem. Four groups of serums were used. It was found that the serums of patients with nonparalytic poliomyelitis in many cases were more effective than those with paralysis. On the other hand, persons in close contact with poliomyelitic patients furnished the worst prophylaxis. Until a more effective therapy is discovered, serum therapy will be used.

Miscarriages Among Tobacco Workers

Fifteen female medical students of the University of Heidelberg investigated the miscarriages among tobacco workers. The study was based on sick fund data and on 671 factory workers who did not smoke themselves but came into direct

contact with tobacco. The factory buildings were situated in the vicinity of Heidelberg and were more or less hygienic and unobjectionable.

The statistics of miscarriages varied greatly in different tobacco plants but, occupationally considered, the figures for the tobacco industry and the metal industry were practically the same, both much higher than those for all the other industries studied, as shown in the accompanying table.

Miscarriages Among Workers in Various Industries

Occupation	Number of Women Investigated	Cases	Miscarriages, per Cent
Tobacco industry	6,500	72	1.1
Metal industry	337	4	1.2
Leather industry	693	5	0.75
Hotel supplies industry	969	7	0.7
Textile industry	392	2	0.51
Foods and table luxuries.....	1,051	4	0.4
Domestic service	3,650	13	0.35

In spite of these figures, the report states that injuries from tobacco are not to be regarded as essentially causative of miscarriages. It is assumed that, in the majority of miscarriages noted, abortions, injuries or other factors were involved. Similarly, the relatively small families of female tobacco workers are not to be attributed to tobacco but chiefly to a reluctance to bear children and to the unfavorable social conditions.

News of the Universities

As reported in THE JOURNAL Nov. 25, 1939, page 1977, all German universities were closed with the exception of five. Several others have since been reopened because of "the quick victorious campaign in Poland," which released more teachers and students. The medical faculties in Breslau, Göttingen, Erlangen, Marburg and the German university in Prague are now again in operation. More universities have been reopened to assure also in war times the availability of trained men for academic callings, especially those necessary for the defense of the country. For the present, the semester plan has been abandoned for a threefold division of the academic year. The introduction of the trimester plan is intended to accelerate the academic output. For students now under colors, intercalary semesters are to be arranged after the war, as was done after the World War. They are also to have preferential standing in the university examinations.

Obituaries

Prof. Anton von Eiselsberg, for many years professor of surgery at the University of Vienna, died October 25 at the age of 79, in consequence of an accident. The university lost in him one of her best known scholars. Eiselsberg, a descendant of an old Austrian family, studied in Vienna, Würzburg, Zurich and Paris. He studied with Billroth both as a student and for six years as his assistant. He was appointed to a professorship first at Utrecht in 1893 and then at Königsberg in 1896 and was called to Vienna in 1901 as director of the first surgical clinic of the university. In 1931 he retired. A tireless teacher, he trained a large body of distinguished surgeons. His scientific contributions touch every field of surgery. His scholarship found its complement in a personality of great charm and noble character. The universities of Leyden, Athens, Edinburgh and Geneva conferred honorary degrees on him.

Prof. Hans Horst Meyer died in Vienna October 8 at the age of 86. The development of pharmacology is inseparably associated with his name. Meyer was born in East Prussia, became a student of Max Jaffé at Königsberg in physiology

and became an assistant of Oswald Schmiedeberg in Strasbourg. In 1881 he began his university career there in pharmacology and was called the same year to the professorship in Dorpat. In 1884 he was called to Marburg, where he served twenty years. During this time he lectured in England and the United States. In 1904 he went to the University of Vienna, where he served until he retired in 1924. Meyer is to be credited with establishing an intimate association between pharmacology and biology, pathology and the clinic. In conjunction with Gottlieb in Heidelberg and later with his student and successor E. P. Pick, he published the textbook on "Experimental Pharmacology as the Basis of Drug Treatment," which went through several editions and was translated into English. Honorary degrees were conferred on him by Vienna, Königsberg, Marburg, St. Andrews, Edinburgh and other institutions. He possessed a friendly personality and was an excellent teacher and department head.

BUCHAREST

(From Our Regular Correspondent)

Dec. 17, 1939.

Increase in the Price of Drugs

Owing to transportation difficulties and the rise in the price of raw materials, the price of drugs and proprietary medicines has risen. The price of iodine has trebled. Whereas a tube of sulfapyridine was sold in August for 280 lei (\$2) it now costs 360 lei (\$2.60). Dressing materials are 50 per cent more costly. Some proprietary medicines for which there is a great demand cannot be had at all. Our home manufacturing chemists are working overtime to cope with the demand.

The New Stomatologic Clinic in Bucharest

The latest addition to the ever increasing number of medical institutions in the capital city, Bucharest, is the stomatologic clinic, which has been opened amid great solemnities. The clinic, which is equipped in the most modern way, will serve the purpose of training students in stomatologic science and at the same time accommodate and treat stomatologic patients. The institute forms a section of the famous Spitalul Coltea. The professorial chair in the new clinic has been filled by Dr. Daniel Theodorescu.

The National Surgical Congress

The tenth National Surgical Congress in Bucharest was held November 5-7 under the chairmanship of Prof. Amza Jianu. In his address Professor Jianu memorialized Prof. Toma Jonescu, founder of the Rumanian surgical school. Professors Nicolau and Borza read a treatise on Nicolas-Favre disease. Bagdasar and Firica read a paper on the surgery of medullary compression, and Placineau and Porumbu read a paper on the role of the endocrines in surgery. Next year the congress will have as chairman the newly appointed minister of public health, Professor Hortolomei. The subjects will be vitamins in surgery, surgical shock and surgery of the spleen.

The New Public Health Minister

With the change of the Rumanian government, the portfolio of the ministry of public health passed into new hands. King Carol II appointed to this post Prof. Dr. Nicolae Hortolomei, director of the surgical urologic clinic of the Bucharest university. In medical circles the appointment met with sincere favor. The predecessors of this minister were not medical men, although they filled their position to the complete satisfaction of the medical profession. To the post of vice minister M. T. Popa, managing director of the hospitals of the National Sick-ness Insurance Society, has been appointed. He filled the position as a vice minister also during the Jorga government.

Accidents with Trivalent Arsenic Compounds

Dr. Selegeanu Nicolae, of Bucharest, at a recent meeting of the local medical society discussed the causes, prevention and treatment of the immediate, early and delayed reactions associated with the intensive arsenical treatment of syphilis. The treatment should take into account the reaction to previous injections, whether the disease is recent and whether there is any indication of a reaction on the part of the nervous system or viscera. The urine should be examined before every injection, and special caution is necessary if it contains bile pigments, albumin or much sediment. The practice of using big doses (ampules containing 4.5 Gm. of neoarsphenamine intended for veterinary purposes), dissolving the whole content and distributing it among six to nine persons, is a dangerous proceeding. The injection should always be made with extreme slowness, watching for the least untoward sign. The physician, realizing his responsibility, should keep a record of cases written in full to date, and a solution of epinephrine and sodium thiosulfate should always be at hand to combat any sign of intolerance.

Marriages

ALFONSO C. SMUDA, Camden, N. J., to Miss Jane Frances Reed, of Gloucester City, at Elkton, Md., in December 1939.

FREDERICK GRAY McCONNELL, Gate City, Va., to Miss Anabel Hope Shawkey, of Charleston, W. Va., in October 1939.

LAURENCE STEPHENSON WOODLEY, Andalusia, Ala., to Miss Edith Bernice Bagwell at Fairfield in October 1939.

HARDY HORACE SMITH, Fort Smith, Ark., to Mrs. Mildred Wright Williams, of Kansas City, Mo., Nov. 28, 1939.

WILLIAM GORDON ROBINSON, Hart, Mich., to Miss Elizabeth L. Lincoln, of Fergus Falls, Minn., Aug. 4, 1939.

KENT L. WATTLEWORTH, Newton, Ill., to Miss Jean Hine, of Indianapolis, in Frankfort, Ind., Aug. 17, 1939.

ROY FRANK SPAULBING, Decherd, Tenn., to Miss Edna Eleanor Nunnery, of Arcola, Miss., Oct. 8, 1939.

CLARENCE J. SALOON, LaFayette, La., to Miss Pauline Womack, of New Orleans, in November 1939.

DAVID ROMULUS THOMAS JR., Augusta, Ga., to Miss Adelaide S. Croft, of Aiken, S. C., in October 1939.

WARREN E. WHEELER, Lansing, Mich., to Miss Margaret Stellmeyer, of Attleboro, Mass., recently.

HOWARD S. WILLIAMS JR., Indianapolis, to Miss Marjorie Duncan at Lafayette, Ind., Oct. 20, 1939.

HARRY N. WAGGONER, Dyersburg, Tenn., to Miss Mary Davis, of Mayfield, Ky., Dec. 9, 1939.

JAMES M. WILSON, Durham, N. C., to Miss Mary Scoggin, of South Boston, Va., Nov. 11, 1939.

RICHARD N. SHERWIN, Hillsboro, Ore., to Miss Glenrose Whitney at St. Helens, Nov. 4, 1939.

WILLIAM D. WARRICK, Birmingham, Ala., to Miss Alice Royston, of Oak Park, Ill., recently.

RUFUS D. WRIGHT, Leighton, Ala., to Miss Rena Buxton, of Lancing, Tenn., Nov. 30, 1939.

VERNON A. NOBLE to Miss Hildegard Thompson, both of Lima, Ohio, in October 1939.

GEORGE W. WALLACE, Biloxi, Miss., to Miss Mona Atkinson, of Gulfport, in October 1939.

ALBERT H. STAHLER to Miss Margaret Lemke, both of Wausau, Wis., Oct. 12, 1939.

ROBERT W. MASON to Miss Lorraine Miller, both of Marshfield, Wis., Oct. 17, 1939.

SAMUEL STEINBERG to Miss Pauline Gold, both of Philadelphia, Nov. 5, 1939.

AMY LOUISE HUNTER to Mr. F. G. Wilson, both of Madison, Wis., Oct. 19, 1939.

EPHRAIM SCHARFMAN, Brooklyn, to Miss Yvette Goldforb, Nov. 23, 1939.

MICHAEL SKOVRON to Miss Jean Aitken, both of Erie, Pa., Oct. 28, 1939.

Deaths

Paul Garfield Weston, Jamestown, N. Y.; Medico-Chirurgical College of Philadelphia, 1908; member of the Medical Society of the State of New York and the American Association of Pathologists and Bacteriologists; associate professor of pathology and bacteriology at the Temple University School of Medicine, Philadelphia, 1908-1910; formerly pathologist to the State Hospital, Warren, Pa.; director of the Municipal Laboratory; pathologist to the Jamestown General Hospital and the Woman's Christian Association Hospital, Jamestown, and the Brooks Memorial Hospital, Dunkirk; aged 58; died, Dec. 18, 1939, of coronary thrombosis.

William Irving Sirovich, New York; Columbia University College of Physicians and Surgeons, New York, 1906; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; member of Congress from the fourteenth congressional district for many years; formerly commissioner of child welfare; member of the advisory board of the National Child Welfare Association of America; formerly bank president; at one time superintendent of the Peoples Hospital; aged 57; died, Dec. 17, 1939.

Robert Percy Smith, Portland, Ore.; College of Physicians and Surgeons, Baltimore, 1891; in 1905 member of the House of Delegates of the American Medical Association; member of the American Psychiatric Association; past president of the state board of medical examiners of Washington; served during the World War; at one time served with the U. S. Public Health Service and the Veterans Bureau; aged 71; died, Nov. 29, 1939, of cerebral hemorrhage.

Joseph Warren Bauman ♂ Major, U. S. Army, retired, San Mateo, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; veteran of the Spanish-American and World wars; entered the medical corps of the U. S. Army as a major in 1920 and retired in 1933 for disability in line of duty; member of the Washington State Medical Association; aged 69; died, Dec. 3, 1939, in the Letterman General Hospital, San Francisco.

Rudolph Angus Nichols Jr. ♂ Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1926; fellow of the American College of Surgeons; associate in anatomy at the Medical College of Virginia; on the staffs of the Sheltering Arms Hospital, Stuart Circle Hospital, Grace Hospital, Memorial Hospital, St. Philip Hospital and the Retreat for the Sick; aged 39; died, Dec. 10, 1939.

Charles Augustus Simpson ♂ George Washington University School of Medicine, Washington, D. C., 1906; professor of dermatology at the University of California; dermatologist to the Emergency Hospital, Episcopal Hospital, Gallinger Hospital, George Washington University Hospital and the Children's Hospital; aged 57; died, Dec. 9, 1939, in Lake Worth, Fla.

George L. Vieweg Sr., Wheeling, W. Va.; College of Physicians and Surgeons, Baltimore, 1902; member of the West Virginia State Medical Association; served during the World War; for many years on the staffs of the Ohio Valley General Hospital and the Wheeling Hospital; medical director of the Ohio County Tuberculosis Sanatorium; aged 58; died, Nov. 30, 1939, of heart disease.

Frederick Herman Neher ♂ St. Paul; Marquette University School of Medicine, Milwaukee, 1915; fellow of the American College of Surgeons; served during the World War; member of the staff of St. Joseph's Hospital; member of the visiting staff of St. Luke's and Charles T. Miller hospitals; aged 48; died, Dec. 3, 1939, of septicemia.

John Burgess Lynch, New York; University of the City of New York Medical Department, 1887; formerly assistant professor of ophthalmology at his alma mater; formerly consulting surgeon to the Nyack (N. Y.) Hospital, St. Francis Hospital and the Herman Knapp Memorial Eye Hospital; aged 78; died, Dec. 2, 1939, of coronary thrombosis.

Samuel Osborn ♂ Lansing, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; fellow of the American College of Physicians; past president of the Ingham County Medical Society; aged 73; died, Dec. 4, 1939, at the Edward W. Sparrow Hospital of coronary thrombosis following a prostatic resection.

Edward Burnett Willingham ♂ Paducah, Ky.; University of Louisville Medical Department, 1892; member of the county board of health and formerly county health officer; past presi-

dent of the McCracken County Medical Society; served during the World War; president of the Riverside Hospital staff; aged 69; died, Dec. 6, 1939.

Ray Stanton Norris, Sanatorium, Texas; University of Texas School of Medicine, Galveston, 1922; member of the State Medical Association of Texas and the American College of Chest Physicians; on the staff of the State Tuberculosis Sanatorium; aged 39; died, Dec. 8, 1939, of tuberculosis.

Emil Francis Kramer, Yonkers, N. Y.; Fordham University School of Medicine, New York, 1920; member of the Medical Society of the State of New York; on the staff of St. Joseph's Hospital; aged 42; died, Dec. 1, 1939, in the Fordham Hospital, New York, of injuries received in an automobile accident.

Alfred Frank Hewitt, Stamford, Conn.; Syracuse (N. Y.) University College of Medicine, 1913; member of the Connecticut State Medical Society; served during the World War; aged 48; on the staff of the Stamford Hospital, where he died, Dec. 20, 1939, of bilateral hydronephrosis with uremia.

Charles B. Gant ♂ Graham, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1900; served during the World War; past president of the Young County Medical Society; on the staff of the Graham Hospital; aged 69; died, Oct. 24, 1939, of cerebral hemorrhage.

Clyde Dale Pence ♂ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; for many years on the staff of the West Side Hospital; at one time editor of the *Illinois Medical Journal*; aged 71; died, Dec. 1, 1939, of chronic myocarditis.

Jasper Andrew Reynolds ♂ Chattanooga, Tenn.; Indiana University School of Medicine, Indianapolis, 1924; fellow of the American College of Surgeons; served during the World War; on the staff of the Erlanger Hospital; aged 47; died, Dec. 7, 1939, of acute lymphatic leukemia.

Robert Maxwell Harbin, Rome, Ga.; Bellevue Hospital Medical College, New York, 1888; member of the Medical Association of Georgia; fellow of the American College of Surgeons; part owner of a hospital bearing his name; aged 75; died, Dec. 12, 1939, of pneumonia.

Cyrus Hilary Anderson ♂ Elgin, Ill.; Missouri Medical College, St. Louis, 1898; formerly managing officer of the East Moline (Ill.) State Hospital and the Anna (Ill.) State Hospital; on the staff of the Elgin State Hospital; aged 70; died, Dec. 18, 1939, of coronary thrombosis.

Harrison Adams Greaves, Philadelphia; Medico-Chirurgical College of Philadelphia, 1902; served during the World War; for many years on the staff of St. Mary's Episcopal and the University of Pennsylvania hospitals; aged 75; died, Dec. 14, 1939, in Browns Mills, N. J.

Henry Thomas Hotchkiss, Brooklyn; Long Island College Hospital, Brooklyn, 1891; formerly diagnostician for the department of health; member of the Medical Society of the State of New York; for many years on the staff of St. John's Hospital; aged 76; died, Dec. 18, 1939.

Frank S. Whitman, Belvidere, Ill.; Hahnemann Medical College and Hospital, Chicago, 1872; member of the Illinois State Medical Society; formerly mayor and bank president; at one time managing officer of the Elgin (Ill.) State Hospital; aged 90; died, Dec. 10, 1939.

Laban Franklin Robbins, Ashland, Ky.; Kentucky School of Medicine, Louisville, 1889; Homeopathic Medical College of Missouri, St. Louis, 1901; Eclectic Medical Institute, Cincinnati, 1904; member of the Kentucky State Medical Association; aged 75; died, Dec. 9, 1939.

Eugene Merrill Desaulniers, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, 1895; at one time school commissioner and mayor of Saint Lambert; formerly member of the Quebec legislature for Chambly County; aged 71; died, Dec. 6, 1939.

Clarence Ignatius McCormick ♂ Kansas City, Mo.; St. Louis University School of Medicine, 1919; on the staff of St. Joseph Hospital; aged 46; died, Dec. 7, 1939, in the Veterans Administration Facility, Excelsior Springs, of hypertensive heart disease.

William Marion Stearns, Chicago; Chicago Homeopathic Medical College, 1880; fellow of the American College of Surgeons; aged 83; was killed, Dec. 1, 1939, in Evanston, Ill., when struck by an automobile while crossing the street.

Osher Gordon ♂ Passaic, N. J.; Eclectic Medical College of the City of New York, 1898; College of Physicians and Surgeons, Baltimore, 1899; on the staff of the Beth Israel Hospital; aged 74; died, Dec. 5, 1939, of heart disease.

William D. Karterman, Klingerstown, Pa.; Jefferson Medical College of Philadelphia, 1889; member of the Medical Society of the State of Pennsylvania; aged 76; died, Dec. 1, 1939, in the Geisinger Hospital, Danville.

Henry William Lang, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; served during the World War; aged 62; died, Dec. 3, 1939, of hypostatic pneumonia.

Earl Brooks Gilbert ♂ Scottsdale, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1920; on the staff of the Henry Clay Frick Memorial Hospital, Mount Pleasant; aged 46; died, Dec. 1, 1939.

George Pressly Neel, Greenwood, S. C.; Jefferson Medical College of Philadelphia, 1888; aged 73; formerly on the staff of the Greenwood Hospital, where he died, Dec. 3, 1939, of cardiovascular renal disease.

Henry Herman Olsen, Wichita, Kan.; University of Kansas School of Medicine, Kansas City, 1917; served during the World War; aged 48; died, Dec. 8, 1939, of cerebral hemorrhage and pernicious anemia.

Samuel Sebastian Markell, Brooklyn; Long Island College Hospital, Brooklyn, 1907; aged 53; died, Nov. 8, 1939, in the Hudson County Tuberculosis Hospital, Jersey City, N. J., of pulmonary tuberculosis.

William C. Duddenhausen, Bay View, Mich.; Louisville (Ky.) Medical College, 1901; aged 60; died, Dec. 7, 1939, in the Lockwood General Hospital, Petoskey, of pulmonary embolism and bronchopneumonia.

Annie Esther Barron Harrison, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 67, died, Dec. 3, 1939, of coronary thrombosis.

John A. James, Rural Valley, Pa.; Medico-Chirurgical College of Philadelphia, 1894; aged 70; died, Oct. 11, 1939, in the Armstrong County Hospital, Kittanning, of chronic nephritis and arteriosclerosis.

Samuel Huston Miller, Columbus, Ohio; Temple University School of Medicine, Philadelphia, 1918; served during the World War; aged 51; died, Dec. 9, 1939, of a skull fracture received in a fall down stairs.

Russell H. McClure ♂ Elyria, Ohio; Western Reserve University Medical Department, Cleveland, 1904; on the staff of the Elyria Memorial Hospital; aged 59; died, Dec. 1, 1939, of heart disease.

Alexander Scaggs, Lovington, Ill.; Barnes Medical College, St. Louis, 1906; on the staff of the Decatur and Macon County Hospital, Decatur; aged 68; died, Dec. 4, 1939, of acute pulmonary edema.

William Jones Love, Birmingham, Ala.; Medical College of Alabama, Mobile, 1893; member of the Medical Association of the State of Alabama; aged 68; died, Dec. 11, 1939, of lobar pneumonia.

Elmer Ellsworth Lake, Hampstead, N. H.; University of Vermont College of Medicine, Burlington, 1892; member of the New Hampshire Medical Society; aged 75; died, Dec. 6, 1939.

Halvor C. Hanson, Chicago; Rush Medical College, Chicago, 1903; on the staff of the Lutheran Deaconess Hospital; aged 58; died, Dec. 10, 1939, of arteriosclerotic heart disease.

Harry Powell Martin, Newark, Ohio; Eclectic Medical Institute, Cincinnati, 1902; aged 65; died, Dec. 9, 1939, in the City Hospital of injuries received in an automobile accident.

Max Erdheim ♂ Brooklyn; Fordham University School of Medicine, New York, 1913; on the staff of the Israel-Zion Hospital; aged 57; died, Dec. 9, 1939, of coronary thrombosis.

John Abel Lowry, Huntsville, Mo.; University of Missouri School of Medicine, Columbia, 1879; aged 86; died, Dec. 1, 1939, of intestinal obstruction and carcinoma of the liver.

Frederick James Kirk, Gananogue, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1892; formerly a practitioner in Brooklyn; aged 72; died, Dec. 12, 1939.

Albert B. Lewis, Hamilton, Kan.; Medical College of Indiana, Indianapolis, 1882; aged 82; died, Oct. 28, 1939, in St. Mary's Hospital, Emporia, of hypostatic pneumonia.

Irwin Huebner ♂ Allentown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1894; aged 70; died, Dec. 12, 1939, at the Sacred Heart Hospital.

George Florian Pache, Angels Camp, Calif.; Cooper Medical College, San Francisco, 1889; formerly county health officer; aged 74; died, Nov. 12, 1939, in Stockton.

Henrietta Dämckroeger, Decoto, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; died, Oct. 13, 1939.

Francesco Sunseri, Los Angeles; Regia Università degli Studi di Palermo, Facoltà di Medicina e Chirurgia, Italy, 1893; aged 71; died, Nov. 8, 1939, of myocarditis.

Charles E. Skinner, Howell, Mich.; Detroit College of Medicine, 1904; member of the Michigan State Medical Society; aged 73; hanged himself, Dec. 6, 1939.

Oliver C. Sheley, Independence, Mo.; Kansas City Medical College, 1876; member of the Missouri State Medical Association; aged 84; died, Dec. 2, 1939.

George Francis Ryan, Orme, Tenn.; University of Tennessee College of Medicine, Memphis, 1911; aged 59; died, Nov. 21, 1939, in Chattanooga.

Benjamin Bernard Eichner, New York; Columbia University College of Physicians and Surgeons, New York, 1919; aged 46; died, Nov. 6, 1939.

Gustave Aime Dubuc, Pincher Creek, Alta., Canada; School of Medicine and Surgery, Montreal, Que., 1898; aged 65; died, Nov. 10, 1939.

Ferdinand Aloysius Grafe, Cincinnati; Cincinnati College of Medicine and Surgery, 1900; aged 76; died, Dec. 5, 1939, of cerebral hemorrhage.

Otto P. Steiner, Chicago; Universität Basel Medizinische Fakultät, Switzerland, 1915; aged 49; died, Oct. 4, 1939, of chronic myocarditis.

Joseph von Werthern, San Francisco; Tulane University of Louisiana School of Medicine, New Orleans, 1892; aged 71; died, Oct. 12, 1939.

William Allan, Los Angeles; University of Edinburgh Faculty of Medicine, Edinburgh, Scotland, 1880; aged 81; died in December 1939.

Frederick Kirchhoffer, San Francisco; University of California Medical Department, San Francisco, 1887; aged 79; died, Oct. 16, 1939.

Charles Douglas Long, Los Angeles; University of Michigan Homeopathic Medical School, Ann Arbor, 1884; aged 82; died, Oct. 18, 1939.

Thomas Vanston Curtin, Vancouver, B. C., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1901; died, Nov. 9, 1939.

John Edward Leo Flynn, Boston; Tufts College Medical School, Boston, 1899; aged 63; died, Nov. 26, 1939, at his home in Quincy, Mass.

Frederick Morrill, Boston (licensed in Massachusetts by years of practice); aged 86; died, Oct. 7, 1939, of cerebral hemorrhage.

Robert Taylor Williams, Los Angeles; Detroit College of Medicine, 1909; aged 56; died, Nov. 16, 1939, of coronary thrombosis.

Michael Rozumski ♂ Chicago; Bennett Medical College, Chicago, 1912; aged 56; died, Dec. 5, 1939, of carcinoma of the prostate.

Leonard Edward Schoch, Los Angeles; Homeopathic Medical College of Missouri, St. Louis, 1890; aged 73; died, Oct. 20, 1939.

Walter Le Roy Blodgett ♂ Calistoga, Calif.; Cooper Medical College, San Francisco, 1895; aged 69; died, Oct. 25, 1939.

Lester Claude Gregory, Pittsburg, Calif.; Cooper Medical College, San Francisco, 1895; aged 66; died, Dec. 10, 1939.

Thomas Alexander McTaggart, Pawnee, Ill.; Rush Medical College, Chicago, 1885; aged 78; died, Dec. 11, 1939.

George M. Reeser, Church Hill, Tenn.; Chattanooga Medical College, 1895; aged 76; died, Nov. 12, 1939.

Nancy Louisa Andrus, Santa Monica, Calif.; Toledo Medical College, 1887; aged 89; died, Oct. 17, 1939.

Milton W. Terry, Philadelphia, Miss. (licensed in Mississippi in 1906); aged 66; died, Nov. 15, 1939.

James Selkirk, Fishtail, Mont.; Albany (N. Y.) Medical College, 1884; aged 80; died, Dec. 3, 1939.

Edward Albert West, New York; Rush Medical College, Chicago, 1889; aged 77; died, Nov. 8, 1939.

Peter Eugene Kerlin, Cleveland; Cleveland Medical College, 1893; aged 76; died, Nov. 26, 1939.

Samuel D. McClure, Newark, Ohio; Cleveland Medical College, 1891; aged 85; died, Dec. 7, 1939.

Correspondence

HYPERSENSITIVITY TO SOLUTION OF POSTERIOR PITUITARY

To the Editor:—Miss M. C., aged 23, 66 inches (168 cm.) tall and weighing $196\frac{1}{4}$ pounds (89 Kg.), presented herself Sept. 18, 1939, because of a typical hypopituitary type of obesity which, she stated, dated from an operation performed six years previously for acute appendicitis. The diagnosis had not been confirmed at operation and along with an appendectomy a right salpingo-oophorectomy had been performed. The patient, in spite of an almost starvation diet, had gained 65 pounds (29.5 Kg.) since the operation.

I placed the girl on the regimen suggested by Werner and Weir (Obesity in the Adult, *J. Missouri M. A.* 35:385 [Oct.] 1938), which in brief consists of desiccated thyroid by mouth and intramuscular injections of solution of posterior pituitary. On the patient's first visit she received 10 units of solution of posterior pituitary. In about five minutes she complained of a sense of constriction in her chest with a generalized itching and a feeling of extreme weakness. This passed over in a few moments and the patient returned home. One week later she received 12 units of solution of posterior pituitary and immediately complained of shortness of breath plus weakness and itching. This again quickly subsided and I suggested that, since she was unduly sensitive to solution of posterior pituitary, she desist from further treatment. Owing to the fact that her loss of weight was very satisfactory, she declined comment.

The patient returned a week later and suggested that we continue the shots. After several minutes of futile altercation with a fat girl determined to reduce, I gave her 5 units of solution of posterior pituitary. She became nauseated, cold and clammy, very gray and cyanotic, with extreme dyspnea. I administered 0.5 cc. of epinephrine 1:1,000 and in a few moments the patient was apparently normal again. She returned home and later informed me that the nausea returned, with subsequent vomiting.

I mention this case merely because of previous mention in *THE JOURNAL* of two cases (McMann, Walter: Hypersensitivity to Solution of Posterior Pituitary, Oct. 14, 1939, p. 1488; Rydberg, W. C.: Hypersensitivity to Pituitary, Nov. 25, 1939, p. 1981).

BERT SELIGMAN, M.D., Toledo, Ohio.

"ARRESTED TUBERCULOSIS"

To the Editor:—In the answer to a query on "Arrested Tuberculosis," appearing in *THE JOURNAL*, Nov. 25, 1939, page 1983, there is a statement to which many physicians will take exception. It reads: "A patient who is given artificial pneumothorax treatment and has the area of disease under a good state of collapse usually is much safer from the standpoint of his associates and his own health than the person who has his disease brought under control by the defense mechanism of the body, aided only by a dietetic-hygienic regimen such as is practiced in a sanatorium or a hospital." The implication is that a person with pulmonary tuberculosis has a better outlook if his lung is treated by some form of collapse therapy than if his disease heals spontaneously. It would further imply that all forms of pulmonary tuberculosis should receive collapse treatment. There is no basis for this belief in fact or in theory, and it can safely be said that there is hardly any authority advocating such indiscriminate use of collapse therapy.

Pulmonary tuberculosis heals under the effects of collapse measures in the same way as it does on bed rest: by absorption of exudative deposits, by shrinkage and scarring of caseous foci

a tuberculous lung by inducing pneumothorax aids the healing process as a result of the relaxation and diminution in volume of the diseased lung and the reduction of its functions. The collapse per se, however, is not a substitute for natural healing, which must take place regardless of the method of treatment used. A caseous pneumonic process in a person with poor resistance will ulcerate and spread under pneumothorax as readily as if the lung were not collapsed.

In many respects a person with pulmonary tuberculosis whose disease heals spontaneously is more fortunate than one who requires the help of collapse measures. In case of pneumothorax, periodic refills of air are needed for a long time; one authority is cited who advocates five years as a minimum. Some patients, for fear of relapse, take treatment for as long as from ten to twenty years. The hardship that this imposes on the individual from an economic standpoint is illustrated by the physician who poses the question why he could not obtain a position as medical officer in a government agency although he had had an effective pneumothorax for three years. The risk of serious complications in pneumothorax is real and should not be minimized. Furthermore, before the patient has obtained an effective pneumothorax he may have had to undergo additional surgical measures which carry certain risks. The danger of empyema and operative accidents, although slight after the first few months of treatment, is nevertheless always present. By far the majority of all tuberculous empyemas are the direct result of pneumothorax treatment. Prolonged collapse causes fibrosis and pleural thickening, which may prevent complete reexpansion of the lung and cause impairment of the respiratory reserve. To cap it all, one never knows when inflations of air can be stopped, since the lung is collapsed and there is no way of telling whether or not complete healing has taken place. As a result, pneumothorax treatment is often prolonged unnecessarily. On the other hand, when healing takes place without collapse measures the progress of the disease can be followed under direct x-ray visualization and the end result is more easily ascertainable. The disease can be classified as arrested or apparently cured and not, as the editor suggests, "arrested (collapsed)."

It is not our intention to minimize the importance of pneumothorax and other collapse measures in the treatment of pulmonary tuberculosis. They have their indications and contraindications. An important contraindication is a disease process which is amenable to spontaneous healing on bed rest and a hygienic-dietetic regimen. It is almost of equal importance to know when not to give pneumothorax as to know when to give it.

MAX PINNER, M.D.

ELI H. RUBIN, M.D.

New York.

"SLOW FETAL HEART RATE"

To the Editor:—I was much interested in reading the query in *THE JOURNAL* December 2 with regard to slow fetal heart rate.

An identical case passed through the indoor delivery service in the Boston Lying-in Hospital, either late in 1912 or early in 1913, during my residency there. There was nothing remarkable about the case except that the mother could not be sure from day to day as to fetal movement and that if the fetal heart was heard at all it was so nearly synchronous with the patient's pulse that the two could not be separated with any degree of certainty. The case terminated with spontaneous uneventful labor and resulting in a full term, well developed and apparently normal baby. The pulse rate of the baby did not increase after birth up to the time of discharge two weeks later. I have no information as to the subsequent history of this case.

J. D. DOWLING, M.D., Birmingham, Ala.

Health Officer.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

RAPID TREATMENT OF SYPHILIS

To the Editor:—The Houston Post, Nov. 18, 1939, published an article entitled "Four Day Cure for Syphilis," by Howard W. Blakeslee, New York, science editor of the Associated Press. One method is used by Dr. Herman Goodman and the other by Drs. Harold Thomas Hyman, Louis Chargin, John L. Rice and William Leifer, of Mount Sinai Hospital, New York. These methods are not sufficiently outlined to enable a physician to follow them. Therefore I am asking you to furnish the necessary data.

M.D., Texas.

To the Editor:—I am seeking advice with regard to a patient under my care who is taking weekly injections for syphilis. She saw an article in a newspaper on the four day treatment of syphilis. Now she is pleading with me to give her this new treatment. Up to the present time this patient has had nine weekly injections of neosarsphenamine, followed in turn by nine biweekly injections of bismuth subsalicylate and by alternating weekly injections of neosarsphenamine and tryparsamide. Both her blood and her spinal fluid Wassermann reactions are positive. She has had no reaction whatever from her treatment and therefore questions my unwillingness to try either of these four day methods. Please advise me.

M.D., Arkansas.

To the Editor:—Please give me what information you may have on the four day cures of syphilis according to Dr. Herman Goodman, New York, and the drip method.

Wesley Jones, M.D., Omaha.

To the Editor:—Please inform me regarding the four day treatment for syphilis.

Roy E. Smucker, M.D., Salem, Ohio.

Because of the extensive interest in this subject, these questions were referred to two recognized authorities, whose separate replies follow.—EDITOR.

ANSWER.—There has been and still is need for a method of treating syphilis in a short period which will simplify the technical procedure and which will decrease the cost of treatment. Such a system of treatment must produce a high percentage of cure and should not produce a higher incidence of complications if it is to be superior to the present methods.

In this country the so-called intensive therapy program was suggested by Pollitzer in 1916. The plan in the main consisted of giving four doses of arsphenamine on four successive days, waiting a week and then again giving another four doses in four days. The Pollitzer program did not become popular primarily because the incidence of cure was low, as the percentage of relapses was high. The method did not adequately control the infectious lesions and was likewise inefficient in the treatment of the late manifestations of the disease.

The newer "four day plans" are improvements in one way or another on the Pollitzer system; however, the general principle of giving a large amount of arsphenamine in a few days is an effort to employ the concept of *sterilisatio magna*. The method suggested by Goodman is essentially that of Pollitzer with the addition of sodium thiosulfate and sodium iodide. The literature does not contain sufficient information about the Goodman suggestion to warrant judgment at this time.

The intravenous drip method of treatment was first reported by Chargin, Leifer and Hyman (The Application of the Intravenous Drip Method of Chemotherapy as Illustrated by Massive Doses of Arsphenamine in the Treatment of Early Syphilis, *THE JOURNAL*, March 16, 1935, p. 878). A second report by Hyman, Chargin and Leifer, entitled "Massive Dose Arsenotherapy of Syphilis by the Intravenous Drip Method (Five Year Observation)" appeared in the *American Journal of the Medical Sciences* (197:480 [April] 1939). The third report, by Hyman, Chargin, Rice and Leifer, appeared in *THE JOURNAL* (Sept. 23, 1939, p. 1208) under the title "Massive Dose Chemotherapy of Early Syphilis by the Intravenous Drip Method." A summarizing report appeared in the *American Journal of Syphilis, Gonorrhea and Venereal Disease* (23:685 [Nov.] 1939).

A summary of the published reports brings out the following points: Two groups of patients have been treated; the first consisted of twenty-five patients and has been observed for five years, while the second group, comprising eighty-six patients, has been under observation for one year.

Clinical Results.—The clinical results were equal to those obtained from systems requiring many months of treatment. The spirochetes disappeared from the lesions within twenty-

four hours. Serologic reversals occurred in approximately 90 per cent of the cases. In the group of 111 cases there were five in which the treatment was a failure.

Complications of Treatment.—The complications of the drip method of treatment were numerous and serious. Dermatitis appeared in 32 per cent of the first group and in 52 per cent of the second series. Polyneuritis was noted in 32 per cent and 38 per cent respectively. Two patients contracted hemorrhagic encephalitis, of whom one died and one had a hemorrhagic complication. No significant renal or hepatic damage was observed.

The febrile reactions, the cutaneous reactions, the polyneuritis and the one death in the 111 cases offer such a high incidence of serious complications that the method should not be adopted by any one who is not entirely conversant with the complications of the treatment of syphilis. The authors repeatedly emphasize the fact that the "method of treatment must still be considered in an experimental phase and should not be employed for routine clinical use until greater safeguards have been established."

The originators of this plan are now using mapharsen by the drip method, having started with a small dose program, and are apparently encountering fewer complications than they did from neosarsphenamine. The report on the value of mapharsen by this procedure will probably be made if and when the results warrant it.

The originators of the drip method are to be encouraged in their efforts to find a method of treatment which will be simple in its technical requirements and which can be given in a short period of time; however, the present plan of treatment is still producing too high an incidence of serious complications to be employed as a routine procedure.

Perhaps the well controlled experiments that the Mount Sinai group is undertaking will eventually produce a safe and rapid method of curing early syphilis, but until that system is announced the evaluation of the plan should be confined to institutions or groups capable of properly studying such a procedure and not undertaken by individuals who treat syphilis, only occasionally.

With regard to the patient who precipitated the inquiry concerning this method of treatment, she should be forcefully discouraged from endeavoring to undergo such a course of treatment at present, as the method is applicable only in the treatment of early syphilis. She has not had a sufficient amount of chemotherapy as yet to know what the effect of intensive arsphenamine and bismuth medication will accomplish for her. When she has had a total of thirty injections of neosarsphenamine and approximately twice as much of a bismuth compound, the spinal fluid should be reexamined; if it still gives a strongly positive reaction and especially if it shows some parietic features the patient should then be given a course of fever therapy.

ANSWER.—In the thirty years since the introduction of arsphenamine there have been numerous efforts to devise a system of treatment which would approximate Ehrlich's dream of the *therapia sterilisatio magna*. Ehrlich and Hata had every right to believe from their experimental work that one dose of arsphenamine would cure human syphilis, but unfortunately clinical experience soon showed that this was not the case. During the ensuing ten years many methods for the use of arsphenamine were devised, most of which were not subjected to sufficient clinical trial to allow an evaluation of their efficacy. Most observers early became impressed, however, with the obvious fact that there was no short cut to the cure of syphilis with arsphenamine and so there developed the present concept of the necessity for long term treatment. Studies of arsenic excretion indicated that from five to seven days was required for the complete excretion of an injected dose of arsphenamine and therefore it was quite natural to select weekly injections as the optimum. From this was developed, by a series of painstaking clinical trials, the present prolonged continuous, alternating treatment for early syphilis.

In the meantime, however, at least one "quick treatment" method gained sufficient currency to be given wide clinical trial and eventually to be subjected to critical analysis of the results to be obtained from its use. This method, described by Pollitzer (The Principles of the Treatment of Syphilis, *J. Cutan. Dis.* 24:633 [Sept.] 1916) consisted in the administration by the usual technic of 0.6 Gm. of arsphenamine every day for three or four days. Clinical use showed that this treatment was not well tolerated by the patient, and the studies of the Cooperative Clinical Group (Stokes, J. H., and others: Cooperative Clinical Studies in the Treatment of Syphilis, *Ven. Dis. Inform.* 13:207 [June], 253 [July] 1932) made it clear that the results to be

obtained from this method of treatment were unsatisfactory. Only 23 per cent of patients treated by this method and observed for more than two years in the clinics of the Cooperative Clinical Group were found to have experienced a satisfactory result, whereas 79 per cent of the patients treated by a standard system were so fortunate.

Little else was done to develop a "quick treatment" for syphilis until 1935, when Hyman and his collaborators (Chargin, Louis; Leifer, William, and Hyman, H. T.: The Application of the Intravenous Drip Method to Chemotherapy as Illustrated by Massive Doses of Arsphenamine in the Treatment of Early Syphilis, *THE JOURNAL*, March 16, 1935, p. 878) published a report of the treatment of twenty-five patients with early syphilis by a continuous intravenous drip method. "Under special nursing supervision, 5 per cent dextrose solution was allowed to flow slowly into a superficial vein of the forearm at the rate of approximately 100 cc. per hour (thirty drops per minute) for a continuous period of ten to fifteen hours daily on each of four or five successive days. At the end of each hour, 0.1 Gm. of neoarsphenamine dissolved in 50 cc. of 5 per cent dextrose was added, so that the patients received 1 Gm. each day. By means of this method it was found possible to administer 4 to 5 Gm. of neoarsphenamine within four or five days" (Hyman, H. T.; Chargin, Louis, and Leifer, William: Massive Dose Arsenotherapy of Syphilis by the Intravenous Drip Method, *Am. J. Syph., Gonorr. & Ven. Dis.* 23:685 [Nov.] 1939).

Fifteen of the original twenty-five patients have now been followed for more than five years and an additional seventy-eight patients have been treated by this method and followed for one year or more. From this experience the authors estimate the maximum percentage of failure to be 14, i. e. at least 86 per cent were "seronegative and well." However, "One patient . . . suddenly developed a convulsion and died two days following an otherwise uneventful completion of treatment . . . [and] . . . polyneuritis of moderate severity occurred in 10 per cent and was slight in another 25 per cent" [of all the patients treated].

The method is still in the experimental stage and is not ready for general application. It may prove to be of major importance but at the moment the factors of dosage and the proper duration of treatment are unsettled, and it is not even certain that the most suitable drug or type of drug has been found. At present Hyman and his collaborators are utilizing mapharsen to a total dose of 1 Gm. in five days.

Abroad, Tzanck, Duperrat and Levi (Le traitement novarsenical massif par instillation intraveineuse goutte à goutte, *Bull. et mém. Soc. méd. d. hôp. de Paris* 54:268 [Feb. 21] 1938) have also used a similar method of treatment, but their published reports do not reflect the care in observation and follow-up displayed by Hyman and his group. They report essentially the same results, however; i. e. a majority of patients so treated were rendered seronegative and apparently well for a short period of observation, but there was a high incidence of peripheral neuritis and deaths apparently as the direct result of treatment.

Search fails to reveal a published description of the method of treatment which the enquirer's newspaper clipping says was "reviewed this fall in the *Medical Record*" and which by implication was ascribed to Dr. Herman Goodman. There is no reason to believe that treatment with an arsphenamine, sodium iodide and sodium thiosulfate on the same day would increase the therapeutic efficiency of any of those drugs. Indeed, there is some indication that the immediately subsequent injection of sodium thiosulfate may "denature" an arsphenamine and render it therapeutically impotent.

COLOR BLINDNESS

To the Editor:—I have read in a textbook of ophthalmology that in cases of congenital color amblyopia "the color sense can be developed, if training is begun at a sufficiently early period of life." Could you tell me where I could find directions for this training? M.D., Puerto Rico.

ANSWER.—It is probable that the question pertains to color blindness rather than to a central scotoma for colors. Color blindness is congenital (except for a few rare cases) and is usually an inherited trait. According to Duke-Elder (*Textbook of Ophthalmology* 1:974) "A person in whom color vision is defective may go through life quite unconscious of his inferiority and without making any incriminating mistakes, differentiating objects by their size, shape and luminosity, using all the time a complete color vocabulary based on his experience, which teaches him that color terms are applied with great consistency to certain objects and to certain achromatic shades, until circumstances are arranged to eliminate these accessory aids, and he realizes

that his sensations differ in some way from the normal." There is no known method of developing a congenitally deficient color sense, but in alert individuals there develops a correlation of shape, size and intensity of the achromatic gray hue (which replaces color sensation in the color blind) to an extent that color is guessed but not actually perceived.

INJURY TO NERVES AT ELBOW

To the Editor:—Two years ago a man was struck in the back of the median epicondyle of the right arm. His arm was paralyzed in flexion for about two hours after the accident. After the first two hours he could extend and flex his forearm but could not extend the fourth and fifth fingers of the right hand. Before the accident the two forearms and hands were apparently the same and normal. Today measurements of the forearms are as follows:

	Measurements in Inches Right	Left
Below styloid process at wrist.....	6½	6½
Wrist above styloid process.....	6½	6½
Forearm at junction of lower and middle thirds.....	7	7
Forearm at middle.....	9	9½
Forearm at junction of middle and upper thirds.....	9½	10
Forearm in upper third.....	10	10½
Forearm above upper third.....	10¼	10½

The man has always been right handed. There is atrophy of the muscles on the ulnar border of the palm of the right hand. There is atrophy of the muscles in the back of the hand (dorsal interossei?). The bones are prominent in the back of the hand. Even the muscles posteriorly between the first and second metacarpal bones are atrophied. The fourth and fifth fingers are in extreme flexion. The fingers cannot be straightened. There is dorsiflexion in the metacarpophalangeal joints but not in the interphalangeal joints. The joints themselves are normal. The second and third fingers cannot be straightened completely because of the inability to extend the fourth and fifth fingers. The ulnar nerve is very tender in the region posterior to the median epicondyle (right)—the site of the injury. The pain radiates down to the palm of the hand when the nerve is touched. Grey's Anatomy does not show that the ulnar nerve innervates any of the atrophied muscle. Please explain how the present condition resulted from an injury to the right ulnar nerve posterior to the median epicondyle. Please suggest a treatment.

M.D., Pennsylvania.

ANSWER.—It is evident that all three nerves at the elbow have been injured. The median appears to have recovered promptly. The ulnar appears to have been severed, and if too much time has not elapsed the ends should be exposed and reunited. The flexion of the fourth and fifth fingers indicates a radial nerve injury. This nerve should also be exposed if the ulnar nerve is operated on. Doubtless there has been a more massive injury than was originally supposed, or the radial nerve may have been injured by the impact.

BODY ODOR, OR BROMIDROSIS

To the Editor:—A woman aged 33 complains of an odor which seems to emanate from the perineal region. She says that this difficulty started at the age of 17 and has been getting worse and is like the smell of a skunk or burning rubber. The odor is somewhat worse premenstrually, but she has noted no change during her six normal pregnancies. Apparently the odor is not continuously present, as I have seen her on several occasions and could note nothing more than the usual odor. She states that she avoids crowds because people move away from her. The children notice it and remark about it. On examining her I found mild vaginitis and a small erosion. She states that there was no change in the odor after these were cleared up. Urinalysis also has given negative results with the usual tests. Any suggestions would be appreciated, as the woman tends to draw away from people and prefers to be alone in order to avoid embarrassment.

M.D., Minnesota.

ANSWER.—The condition of which the patient complains is probably bromidrosis. The abnormally offensive body odor is due to an increased activity of apocrine glands. This increased activity becomes more manifest as a result of emotional excitement, nervousness or sexual activity. It may involve a localized area of the body such as the perineal region. Little can be done to eradicate the offensive odor completely, but patient application of certain principles will control the condition. A decoction in the form of a daily sitz bath consisting of 1 grain (0.06 Gm.) of potassium permanganate in a pint (475 cc.) of water can be used. It is likewise well to prescribe a dusting powder consisting of equal parts of boric acid, tannic acid and purified talc. This should be used liberally in order to absorb the cutaneous secretions. The patient should likewise receive moderate doses of one of the barbiturates such as phenobarbital in order to overcome her nervous and emotional imbalance. Persons with bromidrosis develop fixations concerning their condition which make treatment more difficult to carry out. The unusual disease is most marked during the period of active sexual life and is inclined to improve as the person grows older, probably as a result of the decreased activity of the apocrine glands. All vaginal discharges should be eradicated, for they may contribute to the offensive odor.

IODIDES AND INTRAVENOUS UROGRAPHY

To the Editor:—What substances, if any, can be used for intravenous urography for persons with pulmonary tuberculosis and definite or suspected renal tuberculosis? After purchasing neo-iodapax, I find in the enclosed literature, the following statement: "Neo-iodapax should not be administered to patients with severe liver disorders, nephritis, tuberculosis or hyperthyroidism, and great care should be exercised in using it in cases of acute or chronic uremia. Caution should also be exercised when a severe systemic disease is present as well as a disorder of the urinary tract." I had assumed the iodine in neo-iodapax to be stable, entirely excreted, and not absorbed into the tissues. From the quotation it would appear to be an erroneous assumption. I would appreciate your opinion as to what harm the use of neo-iodapax would do and the method by which it is brought about, if any way other than the well known deleterious effect of iodine on tuberculous lesions in the lungs. M.D., New York.

ANSWER.—The manufacturers of iodine solutions employed for urographic purposes have advised against their use in the presence of the various lesions enumerated in the "caution" statement in conformance to the New and Nonofficial Remedies restriction imposed by the Council on Pharmacy and Chemistry. Experience gained in a large clinic, however, after observation of some 25,000 patients who received various organic iodine solutions commonly employed for excretory urography, failed to reveal untoward reactions in patients suffering from any of the lesions enumerated. The group included cases of tuberculosis in almost every form, exophthalmic goiter and renal insufficiency. Although temporary local or systemic reactions occur, so-called iodine reactions have not been observed. The iodine in these mediums is stable and is usually excreted without much absorption. It is questionable whether the temporary presence of such iodine which might be absorbed from the blood could have a deleterious effect on the tissues, even in the presence of an active lesion such as tuberculosis.

TOXICITY OF CHLORATES

To the Editor:—Information is requested as to whether or not a chemical, sodium chlorate, used in killing weeds, as on WPA weed projects, is toxic to careless users. If so, I should like to know what toxic manifestations might be expected and, further, whether dermatomyositis or exfoliative dermatitis may be produced. M.D., Idaho.

ANSWER.—The use of sodium chlorate is similar to that of potassium chlorate but is less intense. As little as 0.4 Gm. (6 grains) by mouth has produced death. Damaged skin is readily irritated by high concentrations of chlorate solutions. On the unbroken skin, chlorates act as oxidizers and desiccators. Absorption through mucous membranes occurs, so that the inhalation of dust containing chlorates is undesirable. Continued or repeated contacts with the dust of chlorates as used in industry may provoke a dermatitis. The encyclopedia Occupation and Health, of the International Labor Office, states that "cases of irritation, erythema of the skin, and even sores situated on the fingers, accompanied by edema of the face, are fairly common. Oppenheim reports twenty-six cases of dermatitis from chlorates made electrolytically." When appreciable quantities of chlorates are absorbed, vomiting, gastro-enteritis, diarrhea, methemoglobinuria, hepatitis, nephritis, anemia, cyanosis and other significant manifestations may occur.

KIDNEY STONE AND HYPERTENSION

To the Editor:—A prospective patient has a systolic blood pressure of 198. Examination of the urine indicates specific gravity 1.014, albumin, pus, no casts. A urologist finds, "a calcium oxalate stone as big as a quarter in the upper part of the right kidney." Red cell counts and hemoglobin are normal. The heart is normal. The urologist attributes the arterial tension to the pus and albumin. Is this probable? He does not wish to operate for the stone while the pressure is so high. The family physician states that in a report made before the closing session of the A. M. A. at Cleveland, June 15, 1934, it was announced that a new diet had been discovered that was a huge success in dissolving kidney stones. Is this correct and, if so, has anything come of it? Should the kidney be removed or should the stone be removed? What factors would influence a choice between the two procedures? M.D., Georgia.

ANSWER.—Judging from available data, the presence of an uncomplicated stone in the kidney has little if any effect on blood pressure. Whether widespread infection in the kidney secondary to renal stone might be a factor in causing hypertension has not been definitely determined. It is possible in exceptional cases that a widespread infection might be the cause of some form of renal ischemia with resulting hypertension. The chances are, however, that the elevated blood pressure found in this patient has nothing to do with the stone. Hypertension without any other complications present is not regarded as a contraindication to renal surgery.

The operative indications for the patient would seem to be either a pelvicolithotomy or nephrolithotomy, according to the situation of the stone and the conditions found on renal exploration. Nephrectomy would probably not be necessary unless

there was evidence of widespread infection and destruction of the renal parenchyma.

The diet referred to is probably a high acid ash diet, with the addition of vitamin A. This method of treatment has been reported to be of value in the dissolution of recently formed soft stones. It seldom, if ever, however, will dissolve well formed renal stones which have been present for any length of time. It probably would be of no value in this case.

The nature of the stone would be an important factor in the after treatment. This can be determined best by chemical analysis of the stone and not by roentgenographic data. To prevent recurrence of stone certain types of diet are indicated, depending on the chemical ingredients of the stone, the hydrogen ion concentration of the urine, and the bacteriologic investigation.

POLYCYTHEMIA VERA AND THYROIDECTOMY

To the Editor:—My associate and I have run across a rare disease—polycythemia vera. The patient's red blood cell count increased to 6,600,000 and continues to increase unless controlled with phenylhydrazine. The patient has severe symptoms of headache, irritability, visual hallucinations, dizziness and severe prostration when the count increases. Recently a colleague of Chicago has written that thyroidectomy gives permanent or semipermanent relief in this disease. Is this a confirmed fact? Louis A. Ling, M.D., Deer Park, Wash.

ANSWER.—The report referred to is probably that of Limarzi, Keeton and Seed, of Chicago, on the early effect of total thyroidectomy in a case of polycythemia vera (*Proc. Soc. Exper. Biol. & Med.* 36:353 [April] 1937). Fifteen months after thyroidectomy the patient was relieved of her former symptoms but presented the symptoms of myxedema. There was a partial return of the blood picture toward normal. There have been no subsequent reports to corroborate this result.

From a theoretical point of view there may be some rationale for total thyroidectomy in this disease. It is well known that hypothyroidism and myxedema are often associated with anemia, and that exophthalmic goiter is occasionally associated with polycythemia. Conversely, thyroid atrophy has been found in patients suffering from pernicious anemia. Furthermore it has been reported that thyroidectomy in rabbits may result in anemia and that injection of thyroxine in rats may produce hyperplasia of the bone marrow. The literature was cited by R. H. Jaffé (*Chronic Thyroiditis, THE JOURNAL*, Jan. 9, 1937, p. 105).

Despite these clinical and experimental observations, the treatment of this disease should still rest on the use of phenylhydrazine and repeated phlebotomies until the possible value of thyroidectomy is confirmed by further studies. One must remember that the symptoms of the induced myxedema may be as severe as those associated with polycythemia vera.

BLOOD CHOLESTEROL AND BASAL METABOLISM
IN HYPOTHYROIDISM

To the Editor:—Recently I performed basal metabolism and blood cholesterol tests on a patient. The basal metabolism was —18 and the blood cholesterol was 92 mg. per hundred cubic centimeters of blood. The patient's symptoms are more those of hypothyroidism, and with the basal metabolism definitely decreased and the blood cholesterol characteristic of hyperthyroidism the diagnosis is confusing. Which of the two tests mentioned is the more reliable aid in diagnosis? M.D., Texas.

ANSWER.—The basal metabolism is a more reliable guide to the degree of hypothyroidism than the cholesterol content of the blood. If the patient appears to have hypothyroidism, treatment should be started regardless of the blood cholesterol level. It should, of course, be borne in mind that hypothyroidism may be either primary or secondary. The secondary type is most commonly associated with lack of adequate pituitary stimulation and in this instance the clinical picture may be somewhat atypical.

MIGRAINE HEADACHES AND NICOTINIC ACID

To the Editor:—I have recently used nicotinic acid in a single oral dose of 100 mg. for a patient who is subject to migraine headaches preceded by a blinding aura. This dose aborted the attacks with success and with no ill after-effects. Formerly she had been taking aminopyrine tablets, which prevented the headache but left her with a drugged feeling for a day or more. The frequency of the seizures was not affected, but the patient's mental attitude is much improved because she no longer fears the attacks. She was instructed to take the medication at the onset of the aura. May I ask whether this use of nicotinic acid has been previously reported? Alan N. Rogers, M.D., Norristown, Pa.

ANSWER.—Some of those who have worked with nicotinic acid have found that it does relieve some patients with migraine but does not seem to be specific, and nothing on this subject appears to have been published as yet. There is a type of headache accompanying pellagra which often precedes any diagnostic lesion and which is at times somewhat migrainous in type.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in *THE JOURNAL*, January 20, page 276.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II, Feb. 12-14; Part III, June or July, to be given in medical centers having five or more candidates desiring to take the examination. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written*. Part I. Various places throughout the United States and Canada, March 28. *Oral*. Part II. New York, June 10-11. Applications must be received 60 days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: November 1940. *If a sufficient number of applications are received before March 1 there will be an examination at New York, June 10-14.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral and pathologic examinations (Part II) for all candidates (Groups A and B) will be conducted in Atlantic City, N. J., June 8-11. Applications for admission to Group A, Part II, examinations must be on file not later than March 15.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral*. New York, June 8-10; Cleveland, Oct. 5. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 3-5. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: New York, June 10-11. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Kansas City, Mo., May 18, following the Region III meeting of the American Academy of Pediatrics. Seattle, June 2. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Cincinnati, May 17-18. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: New York, June 7-10. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-11. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Illinois October Examination

Mr. Lucien A. File, Acting Superintendent of Registration, reports the written examination (graduates of foreign schools given also a practical test) held at Chicago, Oct. 17-19, 1939. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and two candidates were examined, ninety-nine of whom passed and three failed. Thirty physicians were licensed by reciprocity and nine physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Stanford University School of Medicine	(1939)	85	
George Washington	(1939)	81	
Chicago Medical		79*	
79, 81, 81, 82, *			
Loyola University School of Medicine	(1939)	81, 85, 86, 87	
Northwestern University Medical School	(1937) 86, (1939)	79	
81, 82, 83*, 83, 86, 86, 88*			
Rush Medical College	(1931) 91, (1938)	82, 83, 84, 85, 85*, 86, 87, 90*	
The School of Medicine of the Division of Biological Sciences	(1937) 86, (1938)	83, 85, 86, 86	
University of Illinois College of Medicine	(1931) 81*, (1939)	82, 83*, 83*, 83, 83, 84, 84, 85, 85, 86, 86, 86, 86, 87	
Louisiana State University School of Medicine	(1939)	84	
Harvard Medical School	(1938)	83*	
Tufts College Medical School	(1932)	82	
University of Michigan Medical School	(1938)	86*	
Wayne University College of Medicine	(1939)	78	
Crighton University School of Medicine	(1934) 85, (1938)	80	
University of Rochester School of Medicine	(1937)	86	
Jefferson Medical College of Philadelphia	(1900)	75	
Queens University Faculty of Medicine	(1922)	80	
University of Toronto Faculty of Medicine	(1937)	88	
Medizinische Fakultät der Universität, Wien	(1923)	82,	
(1926) 81, (1934) 80, (1935) 81, (1937) 78*, 82, 82, 84, (1938) 78			
Université de Paris Faculté de Médecine	(1937)	80	
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg	(1922) 78, (1932)	84	
Christian-Albrechts-Universität Medizinische Fakultät, Kiel	(1935)	76	
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin	(1921) 77, (1931) 81, (1936) 77, (1937)	82	
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg	(1917)	80	
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main	(1923)	80	
Medizinische Akademie Düsseldorf	(1921)	76	
Schlesische-Friedrich-Wilhelms-Universität, Breslau	(1935)	77	
Universität Köln Medizinische Fakultät	(1935)	80	

Universität Leipzig Medizinische Fakultät	(1936)	82
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása, Budapest	(1917)	79
Regia Università degli Studi de Bologna. Facoltà di Medicina e Chirurgia	(1937)	77
Universität Bern Medizinische Fakultät	(1935)	77,
(1937) 78, (1938) 75		

School	FAILED	Year Grad.	Number Failed
Medizinische Fakultät der Universität, Wien	(1925), (1936)		2
Hamburgische Universität Medizinische Fakultät, Hamburg	(1921)		1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School	(1937)		Michigan
University of Illinois College of Medicine	(1937)		Wisconsin
Indiana University School of Medicine	(1937)		Indiana
State University of Iowa College of Medicine	(1936, 2)* Iowa		
University of Maryland School of Medicine and College of Physicians and Surgeons	(1934)		Maryland
University of Michigan Medical School	(1920), (1931), (1934), (1935), (1936)* Michigan		
Wayne University College of Medicine	(1937)		Michigan
University of Minnesota Medical School	(1934)* Minnesota		
St. Louis University School of Medicine	(1928), (1935), (1938)* (1938, 2) Missouri		
Washington University School of Medicine	(1936)* (1937) Missouri		
University of Nebraska College of Medicine	(1937), (1938)		Nebraska
University of Oregon Medical School	(1937)		Louisiana
University of Pennsylvania School of Medicine	(1930)		Penn.
Meharry Medical College	(1937)		Tennessee
Vanderbilt University School of Medicine	(1915)		Tennessee
University of Texas School of Medicine	(1937)*		Texas
Medical College of Virginia	(1931)		Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Loyola University School of Medicine	(1939) N. B. M. Ex.		
Northwestern University Medical School	(1928) U.S.P.H.S.		
(1938) N. B. M. Ex.			
Rush Medical College	(1938)* N. B. M. Ex.		
The School of Medicine of the Division of Biological Sciences	(1938) N. B. M. Ex.		
University of Illinois College of Medicine	(1939)* N. B. M. Ex.		
Johns Hopkins University School of Medicine	(1932)* N. B. M. Ex.		
Washington University School of Medicine	(1930) N. B. M. Ex.		
University of Rochester School of Medicine	(1938) N. B. M. Ex.		

* Licenses have not been issued.

New Hampshire September Report

Dr. T. P. Burroughs, secretary, New Hampshire State Board of Registration in Medicine, reports the written examination held at Concord, Sept. 14-15, 1939. The examination covered eight subjects and included eighty questions. An average of 75 per cent was required to pass. Ten candidates were examined, nine of whom passed and one failed. Sixteen physicians were licensed by reciprocity and twelve physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine	(1939)	79*	
Rush Medical College	(1937) 82.1, (1938)		
Boston University	(1939, 2)*		
McGill University	(1935) 90, (1937, 2)*		
Université de Paris	(1928)	82*	

School	FAILED	Year Grad.	Number Failed
Osteopath †			1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University School of Medicine	(1938)		New Jersey
State University of Iowa College of Medicine	(1923)		Iowa
Boston University School of Medicine	(1937)		Mass.
Harvard Medical School	(1918), (1934)		Mass.
(1930) Maine			
Cornell University Medical College	(1937)		New York
New York University College of Medicine	(1932)		New York
Syracuse University College of Medicine	(1937)		New York
Hahnemann Medical College and Hospital of Philadelphia	(1910)		Mass.
University of Pennsylvania School of Medicine	(1929), (1937) Pennsylvania		
University of Vermont College of Medicine	(1923), (1938)		Year Grad.
Medical College of Virginia	(1932)		Virginia
University of Montreal Faculty of Medicine	(1929)		Maine

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine	(1935) N. B. M. Ex.		
Johns Hopkins University School of Medicine	(1934) N. B. M. Ex.		
Johns Hopkins University School of Medicine	(1937), (1939) N. B. M. Ex.		
Harvard Medical School	(1929), (1937, 2)* N. B. M. Ex.		
Tufts College Medical	(1937, 2), (1934) N. B. M. Ex.		
National University of	(1935)		Georgia
University of Edinburgh	(1937) N. B. M. Ex.		

* Licenses have not been issued.

† Examined in medicine and surgery.

Book Notices

Accepted Foods and Their Nutritional Significance. Containing Descriptions of the Products Which Stand Accepted by the Council on Foods of the American Medical Association on September 1, 1939. Cloth. Price, \$2. Pp. 492. Chicago: American Medical Association, 1939.

This book is the official publication of the American Medical Association's Council on Foods. It contains descriptions and detailed information regarding the chemical composition of more than 3,800 accepted food products, together with a discussion of their nutritional significance. The book provides also the Council's opinion on many topics in nutrition, dietetics and the proper advertising of foods. The accepted products are classified in various categories: fats and oils; fruit juices including tomato juice; canned and dried fruit products; grain products; preparations used in the feeding of infants; meats, fish and sea foods; milk and milk products other than butter; foods for special dietetic purposes; sugars and syrups; vegetables and mushrooms, and unclassified and miscellaneous foods, including gelatin, iodized salt, coffee, tea, chocolate, cocoa, chocolate flavored beverage bases, flavoring extracts, dessert products, baking powder, cream of tartar, baking soda and cottonseed flour. There is a suitable subject index as well as an index of all the manufacturers and distributors of food products that stand accepted by the Council on Foods. This book should be helpful to every physician interested in foods and nutrition.

Traité d'ophtalmologie. Publié sous les auspices de la Société française d'ophtalmologie. Par MM. P. Bailliant, Ch. Coutela, E. Redslob, E. Velter. René Onfray: Secrétaire général. Tome V: Pathologie (suite). Par M. Amsler et al. Cloth. Price, 400 francs. Pp. 851, with illustrations. Paris: Masson & Cie, 1939.

Volume v of this new French encyclopedia follows the general make-up and format of its predecessors and, as is characteristic of any work of mixed authorial parentage, is somewhat spotty. The subject of diseases of the iris and ciliary body, including tumors, by Teulière and Beauvieux, of Bordeaux, forms the first chapter and leaves something to be desired, especially from the standpoint of etiology. It is too complete for the general man and not in enough detail for the advanced ophthalmologist. The illustrations are good but there are not enough of them. The subsequent chapter on diseases of the choroid by the same authors is somewhat better but is still inadequate. For example, angiod streaks in the retina rates only one small paragraph of ten lines. Ocular tuberculosis forms a separate chapter and is fairly well done, although the bibliography is incomplete. The work by Friedenwald and by Wood is not even mentioned. But then comes diseases of the retina, 228 pages by Bailliant of Paris, a brilliant, clearly written but still concise account. It is an excellent piece of work and is comparable to Leber's chapter on the retina in Graefe-Saemisch, although more condensed. Both color as well as black and white illustrations are freely used and completely captioned. An extensive bibliography concludes the chapter. Recurrent retinal hemorrhages is the next chapter, by Jeandelize and Drouet, of Nancy. It is well done and describes unusual types of disease that are commonly passed over in textbooks. As brilliant as Bailliant's chapter on the retina is that on retinal detachment by Amsler, of Lausanne, and Mme. Schiff-Wertheimer, of Paris. These former pupils of Gonin have covered this fairly modern aspect of ophthalmology from all aspects except the surgical attack. The chapter is only 146 pages long but is thorough and well illustrated. It should be read by all modern ophthalmologists; it forms an excellent reference chapter, with the 246 articles listed in the bibliography. Tumors of the retina, by Mawas, of Paris, is brief but comprehensive. The chapter on diseases of the optic nerve head is somewhat confused and confusing and is but indifferently illustrated. Tumors of the optic nerve head, by Nordmann, of Strasbourg, is short. The final chapter deals with abnormalities of the crystalline lens and was written by Duverger, of Limoges, and Velter, of Paris. It is rather conventional but thorough and systematic. The extensive biomicroscopic illustrations, mostly in color, are practical. Throughout the entire chapter can be seen the influence of Vogt. Thus, by and large, the fifth volume of the series is up to standard. But the two chapters by Bailliant and Amsler raise this volume to the high point of the four that have as yet appeared.

The Physiology and Pharmacology of the Pituitary Body. Volume II. By H. B. Van Dyke, Head of the Division of Pharmacology, Squibb Institute for Medical Research, New Brunswick, New Jersey. Cloth. Price, \$4.50. Pp. 402, with 28 illustrations. Chicago: University of Chicago Press, 1939.

The first volume of this admirable monograph covered the literature to the middle of 1935; the second volume discusses advances reported to the middle of 1938, listing 1,418 additional papers published in these three years. The author has succeeded in weaving these together to a remarkable degree, so that the present volume is by no means a collection of disjointed addenda to the first but is a connected and readable account of pituitary physiology; and yet overlapping and repetition have been reduced to a minimum. Much of the literature cited receives only a bare mention, and the author is frequently content to quote apparently contradictory conclusions without attempting to reconcile them or to display a preference; but elsewhere he does not shrink from sharp criticism, and the most significant papers are discussed in some detail, often with illustrative tables or figures. The volume includes discussion of the afferent nature of the hypothalamo-pituitary blood vessels; of the cytology of the anterior lobe and its experimental modification; of the differences between pituitary gonadotropic hormones and those of chorionic origin, obtained from pregnancy urine or the serum of pregnant mares; of the part played by the pituitary in the development (not merely the activity) of the mammary glands; of the evidence, now regarded as conclusive, that the posterior pituitary has a genuine physiologic function as an endocrine organ, especially in controlling excretion of water; and of the antihormones. However, there is hardly any aspect of pituitary physiology and pharmacology which does not receive some attention. Possibly the least satisfactory section is that dealing with the pituitary in carbohydrate and fat metabolism; but as this subject is still in a confused state and is hard to discuss without a wide survey of metabolic processes as a whole, one sympathizes with the author's difficulties here. It should be noted finally that the scope of the book is exactly defined by the title, except that an anatomic chapter is included; clinical discoveries are quoted when they throw light on pituitary physiology or pharmacology, but the border between fundamental and applied physiology is crossed rarely and with caution. It is to be hoped that those who feel tempted to discuss the role of the pituitary in the etiology of diseases and disorders in terms of plausible analogies to our experimental knowledge of the gland will take the trouble to discover from these two volumes what that knowledge really amounts to.

La toracoplastia en el tratamiento de la tuberculosis pulmonar. Por Hernán D. Aguilar, adscripto a la Cátedra de clínica quirúrgica de Universidad de Buenos Aires. Tomo I: Introducción, historia, anatomía quirúrgica, fundamentos, indicaciones de la toracoplastia en relación o asociación con otros tratamientos. Tomo II: La operación, post-operatorio, modificaciones producidas por la toracoplastia, resultados, casuística. Paper. Pp. 765; 773-1504, with illustrations. Buenos Aires: Librería y editorial "El Ateneo," 1938.

The wealth of information included in these volumes is amazing. Starting from the beginning of the collapse treatment up to the present the author has covered the entire subject with encyclopedic detail. Every phase of thoracoplasty whether the technic of the operation itself, the indications for operation or the underlying physiologic concept of collapse therapy, is completely covered. The bibliography of some 600 articles is in itself astounding, especially when one realizes as one reads that this bibliography was not picked out of an index by title or used to overawe the reader but that the individual articles have been carefully read and their subject matter used to compile the text. The work is well illustrated, and the illustrations like the bibliography are apt and to the point. In its printing and arrangement the reader will be pleased to note the clear form used in American textbooks. The author's own method of thoracoplasty is carefully depicted and also the methods used the world over. The last half of the second volume is devoted to a careful study of 100 cases. In short, the book stands as a summary of modern thought on thoracoplasty. Every surgeon or physician particularly interested in the treatment of tuberculosis will want this work. It should be in the library of every tuberculosis sanatorium and general hospital.

Atlas of Surgical Operations. By Elliott C. Cutler, Moseley Professor of Surgery, Harvard University, Boston, and Robert Zollinger, Assistant Professor of Surgery, Harvard University. Cloth. Price, \$8. Pp. 181, with 84 plates by Mildred B. Coddington. New York: Macmillan Company, 1939.

This is a small volume containing large illustrations which portray more than fifty surgical procedures accurately and with considerable clarity. A few, for example of anastomoses of the gastrointestinal tract, are too crowded and small to permit easy understanding of important surgical points. The page opposite each illustration contains a brief statement concerning preoperative and postoperative care, procedure and anesthesia. The authors found it impossible to eliminate surgical indications completely for the methods described, and these are not presented with sufficient length. The atlas is of value in illustrating how a certain operation could be accomplished. Methods ranging from tonsillectomy to amputations are included. However, mention is not made of male genital surgery or of urinary tract surgery. Abdominal, intestinal and gynecologic operations are described in excellent detail. An attempt has been made to fill in the gap which exists in surgical textbooks between the theoretical phases of surgery and their practical applications. In the preface the authors state that surgical technic is rightfully not taught in medical school or in textbooks used by students. Later when the medical student is an intern or resident his former textbooks do not supply him with the precise information he desires. The authors feel that a concise accurate description of certain standard surgical technics is desirable for this phase of training. Naturally the methods described are those favored by the authors, but many interns or residents in other localities are never taught the methods described. For the more advanced graduate student of surgery the atlas is of less value if for no other reason than its brevity.

Pharmacie galénique. Par A. Goris, professeur de pharmacie galénique à la Faculté de pharmacie de Paris, et A. Liot, pharmacien supérieur adjoint au directeur de la pharmacie centrale des hôpitaux de Paris. Tomes I et II. Cloth. Price, 450 francs, per set. Pp. 897; 901-1917, with 302 illustrations. Paris: Masson & Cie, 1939.

This large two volume work of galenic pharmacy (in French) is not a treatise on this subject but rather a course on pharmacy that has been delivered by Prof. Albert Goris during the last dozen years before the Faculty of Pharmacy in Paris. While chiefly designed for students, it is also likely to be found useful by practicing pharmacists as well as by physicians. It contains an interesting chapter on the history of pharmacy and a chapter on the classification, choice and conservation of medicaments. The composition of vegetable substances and assay processes are next taken up, and the various forms of drugs, the various pharmaceutical processes and their resultant preparations occupy the remaining portions of these two volumes. The work is brought down to date in the second volume, much of the space of which is occupied by a discussion of ferments, organotherapy and opotherapy, vaccinotherapy, serotherapy and bacteriotherapy. A discussion of the forms of medicines and their administration, sterilization, disinfection and incompatibilities, as well as the preservation of medicaments, complete this monumental treatise on French pharmacy, which should find a place in this country in every pharmaceutical library making a pretense at completeness.

Heparin: Its Chemistry, Physiology and Application in Medicine. By J. Erik Jorpes, M.D., Assoc. Professor of Biochemistry, Karolinska mediko-kirurg Institutet, Stockholm. Cloth. Price, \$2.50. Pp. 87, with 14 illustrations. New York & London: Oxford University Press, 1939.

This little book, appropriately dedicated to Prof. William H. Howell, in whose laboratory the original work on heparin was carried out, is a most useful review of our present knowledge of the subject. The chapters on the chemistry of heparin and those on the probable site of its formation, the mast cells of Ehrlich, give a coordinated picture of the brilliant researches which have been recently carried out in Stockholm by Jorpes and his collaborators. These results are of great interest not only to the physiologist and biochemist but also to the histologist, who has been in doubt as to the function of these mast cells ever since their discovery. While, as is natural, the work carried out in Stockholm is described in considerable detail, adequate reference is made to the original work in Professor Howell's laboratory, to the chemical and physiologic contributions from Toronto and

to work in many other laboratories. Jorpes presents his own views on the chemistry of heparin. He believes that there are a variety of heparins and that the crystalline product of Charles and Scott does not necessarily represent the only active material. This point can be regarded as quite unsettled, but further chemical work will undoubtedly decide the issue. The experimental work on the effect of heparin on thrombus formation is described, and the evidence in favor of the physiologic significance of the anticoagulant is well presented. The results of clinical trials of heparin which have been carried out in Toronto and Stockholm are reviewed. While the author expresses the view that heparin will probably be a useful therapeutic agent, definite claims for its established therapeutic value are limited to the cases of thrombosis of the retinal veins that have been treated in Sweden. The present status of other clinical investigations is described. The book is well written and there are some excellent illustrations. The bibliography will be a valuable contribution to all who are interested in the field of blood clotting and thrombosis.

The Vitamins: A Symposium Arranged Under the Auspices of the Council on Pharmacy and Chemistry and the Council on Foods of the American Medical Association. Cloth. Price, \$1.50. Pp. 637, with illustrations. Chicago: American Medical Association, 1939.

Vitamins now have an established place in therapeutics. In 1911 the word "vitamine" was coined to describe a factor in foods which would prevent or cure polyneuritis in the fowl. Later a large number of accessory food substances came to be known collectively as vitamins. At the present time more than thirty different chemical substances found in various foods have been demonstrated to have important nutritional functions, but only a few of these substances are of practical therapeutic significance. The amount of information available about the vitamins is so great that it is difficult even for experts to keep up with the literature. The present volume is a new compendium of recent authoritative information about the vitamins. The thirty-one chapters include discussions of the chemistry, physiology, pathology, pharmacology and therapeutics, methods of assay, food sources and human requirements of each of the important vitamins. This book should prove to be an indispensable volume for the library of every physician.

Physical Aspects of Radium and Radon Therapy. By Dr. C. E. Eddy, F.Inst.P., Physicist-in-charge, and Mr. T. H. Oddie, M.Sc., A.Inst.P., Physicist of the Commonwealth X-ray and Radium Laboratory, University of Melbourne. Commonwealth of Australia, Department of Health. Second edition. Paper. Pp. 57, with 9 illustrations. Canberra: L. F. Johnston, Commonwealth Government Printer, 1939.

Preparation of this booklet was instituted by the Health Department of the Commonwealth of Australia, under the direction of C. E. Eddy and T. H. Oddie. Its primary purpose in the general campaign against cancer is to provide certain practical physical data which are necessary for effective radium and radon therapy. The booklet contains a cursory review of the physical nature of radioactivity with specific reference, of course, to the radium series. The important characteristics of the products of decay of radium are well outlined, and included are valuable tables presenting the decay of radon and the rise of radium B, radium C and gamma ray activity. A portion of the publication is devoted to detailed description of radium and radon containers with which the commonwealth health department is provided. This obviates a number of errors which might arise, facilitates the handling and care of the radium and radon applicators, and serves to acquaint the therapist with the exact type of radium or radon issue which he receives. The section on gamma ray dosimetry has been revised and, although not completely inclusive, it contains the recent work on gamma ray measurements. It describes and elaborates on the details necessary for precise gamma ray dosimetry and presents several important tables for the measurement of gamma ray dosage. Although the distribution of the dosage by various types and arrangements of applicators is not included, the excellent bibliography which is appended would serve to indicate the source of the necessary information. The booklet provides a ready reference work for certain standard tables necessary for the calculation of radium and radon dosages and provides a further impetus for the quantitative determination of these dosages.

Tumors of the Skin: Benign and Malignant. By Joseph Jordan Eller, M.D., Attending Dermatologist, City Hospital, New York City. Cloth. Price, \$10. Pp. 607, with 403 illustrations. Philadelphia: Lea & Febiger, 1939.

The author's purpose in presenting in a single volume his experience of many years in the diagnosis and successful treatment of tumors of the skin has been admirably achieved and is almost monographic in its scope. The clinical and pathologic features of the precancerous and cancerous lesions of the skin are carefully correlated by the text and the accompanying illustrations. The therapeutic principles emphasize both the relative importance of surgical procedures and the necessary technical knowledge in the modern adaptation of roentgen and radium therapy to the cure of cutaneous cancer. There are valuable charts and tables on radiation dosage in the appendix. The individual case reports are instructive and the numerous diagrammatic examples will be found helpful in dealing with epitheliomas in special locations. Of particular value to the dermatologist and radiotherapist are the sections on carcinoma of the lip, mouth and genitalia. The surgeon will find many useful data in the chapter on cutaneous surgery and the plastic repair which may be necessary following the removal of neoplasms of the skin. The references to the literature appended to each chapter bear the evidence of careful selection. Altogether the author is to be congratulated on having produced a sound, dependable volume in this special field of cutaneous diseases.

Textbook of Nervous Diseases. By Robert Bing, Professor of Neurology, University of Basel, Switzerland. Translated and enlarged by Webb Haymaker, Assistant Clinical Professor of Neurology, University of California, San Francisco. From the fifth German edition. Cloth. Price, \$10. Pp. 838, with 207 illustrations. St. Louis: C. V. Mosby Company, 1939.

This is the English translation of Bing's *Lehrbuch der Nervenerkrankheiten*. It contains thirty chapters. The translator has rearranged and augmented the original for adaptation to American usage. Despite this the cogent observations and conclusions of Professor Bing are retained. If in neurology one must be methodical and accurate, it follows that the discussion of entities should facilitate an easy understanding as far as possible instead of forcing the student to memorize signs and symptoms. Professor Bing has written this book with the former idea in mind. All the chapters are abreast of the time and are written for the student, constituting as well an excellent reference book for the neurologist. Following each section there is a large bibliography of both American and foreign contributors. Considerable discussion regarding treatment together with written prescriptions are to be found. There are chapters on peripheral nerves, dyskinesias, muscular atrophies, degenerative diseases, demyelinating disorders, syphilis of the central nervous system, arteriosclerosis and hemorrhages, infectious diseases and intoxications, aphasia, apraxia and agnosia, tumors, diseases of the cerebellum, disease of the endocrine glands, diseases of the autonomic system, convulsive disorders, headaches and psychoneuroses. The illustrations are good.

Cesarean Section: Lower Segment Operation. By C. McIntosh Marshall, F.R.C.S. Cloth. Price, \$6.50. Pp. 230, with 109 illustrations. Baltimore: William Wood & Company, 1939.

The author favors the transverse incision in the lower uterine segment and states numerous reasons for his preference. For anesthesia he employed ether in about one fourth of his cases (sixty), local infiltration in slightly less than one third (seventy-four) and spinal anesthesia in a little less than one half (112). The author's frequent use of spinal anesthesia is surprising in view of his own statement, which he emphasizes by italicizing, that "any obstetrician who sets out to perform a large series of cesarean sections under spinal anesthesia must be prepared to face a possible mortality of not less than 1 per cent due to this cause alone." The author specifies ways of making spinal anesthesia safer in cesarean section but, even if every precaution is taken, spinal anesthesia is nevertheless more dangerous for obstetric patients than any other anesthetic. Throughout the book there is abundant evidence of the author's extensive reading on the subject of the cervical cesarean section and his unbiased attitude toward the views of other writers. The

reviewer can offer only one criticism. The author failed to discuss the question of uterine scars and how they heal after cervical cesarean section operations. A few years ago Greenhill and Bloom reported such a study made on a large series of scars removed at subsequent cesarean sections. The author is to be congratulated on the results he has obtained in his own series of cases. He has performed 246 lower segment operations without a single maternal death. This speaks highly for both the operation and the operator. The author is to be further commended for having produced such an excellent book. It is written in a most fluent style and it is abundantly and clearly illustrated. It should be carefully studied by every obstetrician and by all other physicians who perform cesarean section.

The Rectum and Colon. By E. Parker Hayden, A.B., M.D., F.A.C.S., Assistant in Surgery in the Harvard Medical School, Boston, Massachusetts. Cloth. Price, \$5.50. Pp. 434, with 169 illustrations. Philadelphia: Lea & Febiger, 1939.

The first chapter contains a brief discussion of the anatomy of the terminal portion of the colon. The second chapter, on methods of examination, contains many illustrations of surgical instruments. Two illustrations show the Sims and knee-chest positions. The third chapter, on anorectal symptoms, includes discussions of bleeding, pain, pruritus, variation in bowel habits and protrusion. These subjects are dealt with briefly. The remainder of the book is composed of chapters on anal pruritus, anesthesia, preoperative and postoperative care, fissure, hemorrhoids, prolapse, perirectal and rectal infections, fistula, venereal lymphopathy, other infectious genital diseases, diarrhea and colitis, tuberculosis and actinomycosis, diverticulosis and diverticulitis, benign tumors, multiple polyposis, carcinoma, melanosis, magacolon and volvulus, and injuries and foreign bodies.

Beesly and Johnston's Manual of Surgical Anatomy. Revised by John Bruce, M.B., F.R.C.S., Assistant Surgeon, Edinburgh Royal Infirmary, Edinburgh, and Robert Walmsley, M.D., Lecturer on Anatomy, University of Edinburgh, Edinburgh. Fifth edition. Cloth. Price, \$6.50. Pp. 733, with 187 illustrations. New York & London: Oxford University Press, 1939.

Works on surgical anatomy are most successful when they strike a happy medium between the two broad but related fields. This manual exemplifies such a medium. The descriptive anatomy is clear and precise and uses anglicized terms to great advantage. The surgical importance of the anatomic parts is included in the descriptive text. Unfortunately the illustrations, which are excellent of the anatomy involved, are not as well directed from the surgical point of view. Additional illustrations of surgical approaches and surgical anatomy would more satisfactorily complement the text and add to the excellence of the manual.

The Plant Alkaloids. By Thomas Anderson Henry, D.Sc., Director, Wellcome Chemical Research Laboratories, London. Third edition. Cloth. Price, \$12. Pp. 689. Philadelphia: P. Blakiston's Son & Co., Inc., 1939.

As in previous editions, the enumerating of plant sources is complete, although many alkaloid-bearing plants have been omitted. The physiologic actions are limited, yet many pertinent references are given. Considerable space has been saved by omitting details of their estimation. The text classifies alkaloids according to the old nuclear type which was followed in preceding editions. Sections on isoquinoline and indole groups have been enlarged. The section on strychnos alkaloids has been brought down to date, although condensed. Several groups, such as lupinanes, phenanthridine, pyrrolidin and quiniazoline, have been added, while those common purine bases are deleted. The volume is indispensable and should be in every scientific library.

Fortschritte auf dem Gebiet der Nervenerkrankheiten. IV. Oeynhausener Ärztevereinskurs 13. und 14. Mai 1939. Herausgegeben von der Ärztlichen Vereinigung Bad Oeynhausen. Boards. Price, 12 marks. Pp. 178, with 63 illustrations. Dresden & Leipzig: Theodor Steinkopf, 1939.

This brochure contains ten excellent essays on current neurologic problems by various authorities in the field. Among the subjects considered are cerebral hemorrhage, avitaminosis, encephalitis, toxic myelopathy and extrapyramidal diseases. The articles are succinct, well written and illustrated. The volume as a whole is of great interest.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Abortions: Admissibility of Testimony of Medical Examiner.—The defendant, described in the record as a trained nurse, was convicted under an indictment charging that she, with intent to procure a miscarriage, unlawfully used an instrument on the body of a woman and that in consequence thereof the woman died. From this judgment of a conviction, the defendant appealed to the Supreme Judicial Court of Massachusetts.

The medical examiner for the district in which the death occurred, who performed an autopsy on the body of the deceased on the day of her death, was called as a witness by the Commonwealth. He testified at some length as to what he did and what he observed in performing the autopsy. Briefly stated, he testified that he found a one-quarter inch (0.64 cm.) puncture wound in the top of the uterus and, just below the wound, evidence of a septic condition of a portion of the placenta and a condition of sepsis elsewhere in the contents of the abdominal cavity which, in his opinion, originated in the vicinity of the puncture wound at a time between nine and twelve days before the death; that it was impossible to determine the stage of pregnancy; that in his opinion the puncture wound could have been caused only by the introduction of a foreign instrument into the uterus; that the death resulted from general sepsis associated with purulent peritonitis, and that this condition, which caused the death, was due to instrumental interference with pregnancy. The defendant contended, in the first place, that the medical examiner was not shown to possess the qualifications to be permitted to testify as an expert witness. The witness, however, testified that he had been medical examiner for more than six years and for thirty-nine years had been in general practice as a physician and surgeon, particularly in the field of obstetrics. The decision of the preliminary question as to whether the witness was qualified to give expert testimony, the Supreme Judicial Court said, was for the trial judge, and that decision is conclusive in view of the absence of any evidence that it was erroneous as a matter of law. The trial court did not err in admitting the testimony of the medical examiner that certain knitting needles exhibited to him when on the witness stand by the district attorney were of a type and kind capable of causing an abortion by their introduction into the uterus of a pregnant woman. The needles were marked for identification and later, on the admission by the defendant that they were found in her house after the death of the deceased, they were introduced in evidence. A qualified medical expert, the court said, who has found in a woman conditions indicating that there has been an abortion by instrumental means, may give his opinion as to the kind of an instrument that would produce the conditions found. His knowledge of anatomy and his professional experience give him a capacity to express an opinion in matters "beyond the range of general knowledge."

The defendant further complained because the trial court excluded the following question put to the medical examiner on cross examination:

Is it possible for a woman to use a drug, such as ergot or pills containing ergot or other drugs, to abort herself?

Counsel for the defendant stated that he based the question on a statement which, he asserted, was made by the deceased as shown by the record of a hospital where she was under treatment for a period preceding her death. In response to a question from the trial judge, he said that his contention was not that the statement was admissible as a dying declaration but that it was admissible because it was made to a physician under whose treatment the defendant then was. The physician referred to was not called as a witness. The defendant's counsel, the court pointed out, proceeded in this matter on the erroneous assumption that a physician could testify to a statement made to him by his patient as to the cause of the patient's condition. A physi-

cian, when a witness, may in his testimony repeat statements made to him by a patient as to the patient's injuries, bodily or mental ailments, pains, symptoms, feelings or conditions, as the basis of an opinion formed by him and expressed by him on the witness stand. He cannot, however, testify as to a statement, made to him by the patient, of the cause of the patient's injuries or conditions when the statement is not made in such circumstances as to make it admissible as a dying declaration.

The trial court refused to admit in evidence a portion of the hospital record which contained a purported statement of the deceased as to the cause of her condition. The rest of the hospital record was admitted in evidence. Hospital records, the court said, kept as required by law in Massachusetts, are admissible only "so far as such records relate to the treatment and medical history" of a patient. Any statement by the deceased, as to the cause of her condition, appearing in the hospital record, like such a statement made to her physician, was inadmissible. The exclusion of the statement in the hospital record relating to the cause of her condition, therefore, was proper.

After a consideration of all assignments of error, the Supreme Judicial Court could find no error of law, and the judgment of conviction was affirmed.—*Commonwealth v. Daven (Mass.)*, 19 N. E. (2d) 315.

Hospitals: Failure Timely to File Additional Notice of Lien Deprives Hospital of Lien.—A New York law, granting a hospital in which a person injured through the fault of another is treated a lien on all recoveries or settlements had by the injured person by reason of his injury, provides that no such lien shall be effective unless written notice of it is filed in the office of the appropriate county clerk "prior to the payment of any moneys to such injured person." The law also provides that in addition to the preliminary notice of lien just referred to a hospital must also file in the county clerk's office "within five days of the discharge of any injured person, an additional notice of lien, duly verified, which shall show the total hospital charges which have accrued and no lien hereunder shall exceed this amount." The Society of New York Hospital filed a preliminary notice of such a lien prior to receipt by the injured person of any moneys in settlement of his claim for the injuries for which treatment was given in the hospital. The hospital, however, did not file the additional notice referred to until seven days after the injured person was discharged from the hospital. In the opinion of the supreme court, appellate division, first department, New York, with two judges dissenting, the failure of the hospital to file the additional notice within five days after the patient's discharge from the hospital deprived the hospital of its lien on the settlement received by the patient.—*Mellicker v. Michelson, Application of Society of New York Hospital* (N. Y.), 9 N. Y. S. (2d) 1016.

Society Proceedings

COMING MEETINGS

- American Association of Anatomists, Louisville, Ky., Mar. 20-22. Dr. E. R. Clark, Dept. of Anatomy, Univ. of Pennsylvania School of Medicine, Philadelphia, Secretary.
- American Association of Pathologists and Bacteriologists, Pittsburgh, Mar. 21-22. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.
- American Orthopsychiatric Association, Boston, Feb. 22-24. Dr. Nerve C. La Mar, 149 East 73d St., New York, Secretary.
- American Physiological Society, New Orleans, March 13-16. Dr. F. B. Bard, Johns Hopkins Medical School, Baltimore, Secretary.
- American Society for Experimental Pathology, New Orleans, March 13-14. Dr. Paul R. Cannon, Dept. of Pathology, University of Chicago, Chicago, Secretary.
- American Society for Pharmacology and Experimental Therapeutics, New Orleans, March 13-16. Dr. G. Philip Grabfield, 319 Longwood Ave., Boston, Secretary.
- Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. W. D. Cutter, 535 North Dearborn St., Chicago, Secretary.
- Federation of American Societies for Experimental Biology, New Orleans, Mar. 13-16. Dr. D. R. Hocker, 19 West Chase St., Baltimore, Secretary.
- Mid-South Post-Graduate Medical Assembly, Memphis, Tenn., Feb. 13-14. Dr. A. F. Cooper, Goodwyn Institute Bldg., Memphis, Tenn., Secretary.
- Society of Surgeons of New Jersey, Camden, Jan. 31. Dr. Walter F. Mount, 21 Plymouth St., Montclair, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

18: 519-646 (Nov.) 1939

- Rate of Circulation in Arteries and Veins of Man: I. Studies of Normal Subjects and of Those with Occlusive Arterial Disease and Hyperthyroidism. W. F. Kvale and E. V. Allen, Rochester, Minn.—p. 519.
- Id.: II. Studies of Hypertension, of Orthostatic Hypotension and of Effects of Sympathectomy. W. F. Kvale, E. V. Allen and A. W. Adson, Rochester, Minn.—p. 537.
- Id.: III. Influence of Temperature of Skin, Digestion, Posture and Exercise. W. F. Kvale and E. V. Allen, Rochester, Minn.—p. 546.
- Id.: IV. Error in Sodium Cyanide Method of Determining Speed of Venous Blood Flow. W. F. Kvale and E. V. Allen, Rochester, Minn.—p. 557.
- Aneurysm of Pulmonary Artery: Review of Literature and Report of Two New Cases. L. J. Boyd and T. H. McGavack, New York.—p. 562.
- Cardiac Metastasis from Malignant Melanoma: Report of Four Cases. V. Moragues, St. Louis.—p. 579.

American J. Digestive Diseases, Huntington, Ind.

G: 589-692 (Nov.) 1939

- Intubation Studies of Human Small Intestine: XVII. Effect of Atropine and Belladonna on Motor Activity of Small Intestine and Colon. K. A. Elsom and J. L. Drossner, Philadelphia.—p. 589.
- Id.: XVIII. Effect of Pitressin and of Amphetamine (Benzedrine) Sulfate on Motor Activity of Small Intestine and Colon. K. A. Elsom, P. M. Glenn and J. L. Drossner, Philadelphia.—p. 593.
- Observations on Oral Administration of Citrated Blood in Man: I. Effects on Blood Urea Nitrogen. L. Schiff, R. J. Stevens, S. Goodman, Ellen Garber and Anna Lublin, Cincinnati.—p. 597.
- Comparative Value of Serial Hippuric Acid Excretion, Total Cholesterol, Cholesterol Ester and Phospholipid Tests in Diseases of Liver: I. Results of Tests. F. W. White, E. Deutsch and S. Maddock, with assistance of Virginia Downing and Dorothy Jensen, Boston.—p. 603.
- Effects of Vitamin Deficiency on Gastrointestinal Tract. D. L. Wilbur, San Francisco.—p. 610.
- Clinical Value of Quantitative Vitamin Determinations. T. T. Mackie and W. H. Eddy, with assistance of Ruth Bach, New York.—p. 617.
- Clinical Observations on Possible Relationship of Digestive Tract Disease to Type of Osteoporosis. C. L. Brown, S. R. Vogel and R. P. Meader, Philadelphia.—p. 628.
- *Role of Circulation in Production of Peptic Ulcer. R. S. Boles, Helena E. Riggs and J. O. Griffiths, Philadelphia.—p. 632.
- Massive Hemorrhage from Peptic Ulcer: Study Based on Vital Statistics of City of Seattle During Four Years and on Personal Experience in Private Practice. J. M. Blackford and W. S. Cole, Seattle.—p. 637.
- Results of Treatment of Massive Gastric Hemorrhage. A. F. R. Andresen, Brooklyn.—p. 641.
- Gastrointestinal Hemorrhage from Otherwise Symptomless Lesions, with Special Reference to Duodenal Ulcer. G. B. Eusterman and C. G. Morlock, Rochester, Minn.—p. 647.
- Some Unusual Gastro-Enterologic Surgical Problems. F. H. Lahey and S. F. Marshall, Boston.—p. 654.

Circulatory Insufficiency and Peptic Ulcer.—In evaluating the role of circulatory insufficiency in the mechanism of gastric ulcer, Boles and his colleagues analyzed a series of 161 cases which at necropsy presented acute lesions of the gastric mucosa. Although the cause of death varied widely, the cases can be divided into four primary categories: cardiovascular, metabolic, cerebral and anemic. In order to facilitate comparison with clinical cases of ulcer and to minimize the cardiovascular insufficiency of older age groups, the cases were chosen from the younger age levels: the average was 33 years, and 80 per cent of the subjects were less than 50 years of age. Although the lesions of the gastric mucosa were acute, microscopic study with differential stains demonstrated that in the area of the mucosal lesion all the layers of the wall of the stomach were involved. Further, although the mucosal degenerations were acute the alterations in the deeper layers were essentially chronic. In no area examined was the mucosa alone involved. The mucosal alterations were invariably superimposed on chronically degenerated submucosal and muscular layers. Conversely, it was possible to demonstrate areas adja-

cent to the acute mucosal lesions in which normal healthy mucosa had regenerated despite chronic alterations in the deeper layers. Although the nature of gastric lesions strongly suggests an insufficiency of the circulation, a study of them gives no clue whether this condition is a local one or is due to general insufficiency with its frequently resulting widespread stasis. For this reason, using the same criteria employed in the microscopic study of the gastric lesion, namely degeneration of parenchymatous cells with proliferation of connective tissue, the authors attempted an evaluation of the presence of generalized circulatory insufficiency by examining the brain, liver and kidney in cases presenting acute lesions of the gastric mucosa. The evidence of impaired circulation found in these organs would make it reasonable to assume that the anatomically inadequate blood supply and the intrinsic vasomotor innervation of the stomach do not cause the gastric lesion through local disturbances alone but merely intensify a local picture incident to the generalized insufficiency of the circulation. The conclusion is that, regardless of etiology, focal gastric lesions are the result of chronic circulatory insufficiency to all the structures of the gastric wall. Generalized circulatory insufficiency may be established through quantitative, qualitative or vasomotor alterations in the circulatory system.

American Journal of Medical Sciences, Philadelphia

198: 589-736 (Nov.) 1939

- Considerations Bearing on Treatment of Arthritics. R. Pemberton, Philadelphia.—p. 589.
- *Use of Sulfapyridine in Treatment of Gonococcal Urethritis in the Male. S. H. Johnson 3d, P. R. Leberman and D. S. Pepper, with technical assistance of Helen Lynch, Philadelphia.—p. 594.
- Elimination of Effect of Chemical Mediator of Renal Hypertension. S. Rodbard and L. N. Katz, Chicago.—p. 602.
- Response in Blood Pressure of Hypertensive Patients to Acetyl-Beta-Methylcholine. D. E. Engle and M. W. Binger, Rochester, Minn.—p. 609.
- *Chronic Hypertrophic Spinal Pachymeningitis. G. Wilson, H. Bartle Jr. and J. S. Dean, Philadelphia.—p. 616.
- Study of Quick Method for Quantitative Determination of Prothrombin with Suggested Modifications. F. J. Pohle and J. K. Stewart, Madison, Wis.—p. 622.
- Observations on Human Blood Stored at 4 to 6 Centigrade. W. P. Belk, N. W. Henry and Florence Rosenstein, Philadelphia.—p. 631.
- *Collection and Preservation of Placental Blood for Transfusion Purposes. C. A. Gwynn and J. B. Alsever, Syracuse, N. Y.—p. 634.
- Blood Studies on the Newborn: I. Determination of Hemoglobin, Volume of Packed Red Cells, Reticulocytes and Fragility of Erythrocytes Over a Nine Day Period. T. R. Waugh, F. T. Merchant and G. B. Maughan, Montreal.—p. 646.
- Studies on Circulation in Pregnancy: IV. Venous Pressure Observations in Normal Pregnant Women, in Pregnant Women with Compensated and Decompensated Heart Disease and in Pregnancy "Toxemias." K. J. Thomson, Mount McGregor, N. Y.; D. E. Reid and M. E. Cohen, Boston.—p. 665.
- Cor Pulmonale Due to Obstruction of Pulmonary Artery by Syphilitic Aortic Aneurysms. C. F. Garvin and M. L. Siegel, Cleveland.—p. 679.
- Study of Incidence of Coronary Occlusion and Angina Pectoris in White and Negro Races. G. E. Burch and N. W. Voorhies, New Orleans.—p. 685.
- Experimental Localized Auricular Necrosis: Electrocardiographic Study. A. Sanders, Chicago.—p. 690.
- Metrazol Convulsive Shock Therapy in Affective Psychoses: Follow-Up Report of Results Obtained in Sixty-One Depressive and Nine Manic Cases. A. E. Bennett, Omaha.—p. 695.
- *Metabolic and Cardiovascular Effects of Intramuscular Injections of Adrenalin and of Amphetamine. D. B. Dill, R. E. Johnson and C. Daly, Boston.—p. 702.

Sulfapyridine for Gonococcal Urethritis.—Johnson and his associates used sulfapyridine for the treatment of eighty male patients with gonococcal urethritis. There were seventy cases of acute, six of subacute and four of chronic urethritis. Forty-one of the patients had had from one to seven previous attacks of gonorrhea. Gram-negative intracellular diplococci were demonstrated in Gram stains of the urethral discharge of all the patients before treatment was instituted. The patients were seen when possible at intervals of two or three days, the urine being examined by the two glass test. In the majority of cases blood sulfapyridine levels were taken after four days and again after ten and fourteen days of treatment. The dosage scale, chosen arbitrarily and adhered to in a routine way unless some untoward reaction occurred, consisted of 3 Gm. of sulfapyridine daily for four days and then 2 Gm. daily for from six to ten days. This was given in divided doses. The following provocative tests of cure were employed when the urine had remained clear for from four to six days following discontinuance of clinical symptoms: massage of the prostate and seminal vesicles, passage of bougies and sounds with digital stripping of

the anterior portion of the urethra, consumption of alcoholic drinks, sexual intercourse with a condom and one or two negative cultures of the prostatic secretion. Of the eighty patients, seventeen either failed to complete the course of treatment or failed to complete the tests of cure. Of the remaining sixty-three patients followed for two or more months, fifty-four of whom had acute urethritis, forty-two (77.8 per cent) were cured. The four who had subacute urethritis were cured, and of the four who had chronic urethritis all but one were cured. In all, there were fifty patients (79.2 per cent) who were classified as cured. The average duration of urethral discharge in the cured patients after the institution of treatment was 2.77 days. This represents a remarkable advance over the older forms of treatment with sedation and local therapy, with which from ten days to two weeks almost invariably elapsed before the same improvement occurred. In the cases of acute urethritis the average duration of discharge was 2.93 days, in the subacute cases it was 1.8 days and in the chronic cases it was 2.3 days. There were nineteen patients in the series who had been previously treated with, and were resistant to, one or more of the sulfanilamide group of preparations. Of these, thirteen were cured with sulfapyridine.

Chronic Hypertrophic Spinal Pachymeningitis.—Wilson and his colleagues collected fifteen cases of hypertrophic spinal pachymeningitis (twelve with necropsies) and they summarize some of the principal clinical and pathologic features of the condition. Clinically the prominence of pain, sensory disturbances, ataxia, pyramidal and lower motor neuron symptoms and vesical dysfunction all had adequate pathologic bases. No symptom or syndrome can be regarded as pathognomonic. In fact, from the case studies syphilitic hypertrophic pachymeningitis, although showing an affinity for the cervical and dorsal regions, cannot often be regarded as an exclusively localized process but should be considered rather as a regional manifestation of a usually more generalized meningovascular syphilis. In ten of the fifteen cases definite cerebral symptoms were clinically manifest. The clinical picture in two cases simulated cord tumor so closely that laminectomies were performed. One of these cases showed partial block and negative serologic studies and the other showed no block, a negative spinal fluid Wassermann reaction but signs of fairly definite level (however the blood Wassermann reaction in this case was positive). Correlating the clinical and pathologic diagnoses in the twelve necropsies, in only one instance was any clinical mention made of pachymeningitis, the clinical diagnoses being "myelitis," "cerebrospinal syphilis," "dementia paralytica with tabes" and in one instance a diagnosis of amyotrophic lateral sclerosis. The authors believe that the term "myelitis" in these cases not only is a pathologic misnomer but draws attention from the nature of the process. It also invites an easy but sometimes unjustifiable therapeutic pessimism. The major pathologic process is in the meninges, and cord changes are largely secondary to embarrassed blood supply or direct compression of the roots or rim of the cord. If medical therapy fails, surgical decompression should be given more serious consideration in such cases.

Placental Blood for Transfusion.—In the collection of placental blood for transfusion, Gwynn and Alsever recommend that the following conditions should determine whether the blood is suitable for collection: The mother must be free from transmissible disease; the membranes must not have been ruptured more than forty-eight hours; there must not be obvious infection; the baby must be at or near term; the baby may not have asphyxia pallida, and the presentation may not be breech or transverse. Before blood is collected, antepartum Wassermann and flocculation tests of the blood of all mothers are performed. As an added precaution, blood is taken from the cord after delivery of the placenta for serologic examination. The authors list the equipment that they use. The preserving fluid is made up so that each thousand cubic centimeters contains 20 Gm. of dextrose, 5 Gm. of sodium citrate (0.5 per cent) and 4.6 Gm. of sodium chloride. The final solution is isotonic. It is made as two solutions—one containing the dextrose, the other the salt and citrate, each in 500 cc. volume. These are then apportioned 50 cc. to a flask and sterilized; then one of each type is poured into the collecting flask just before the blood is collected. As soon as the baby is born the cord is clamped and cut. The baby

is attended to first and then the blood is collected (each step of the collection is described). During the entire collection the assistant gently agitates the flask with a rotary motion to prevent the blood from clotting before it is thoroughly mixed with the preserving fluid. When the flow of blood becomes slow, pressure is applied to the fundus of the uterus through the abdomen to force out the remaining blood. When this is accomplished, the cord is gently stripped until there is no more blood in the vessels. The last bit of blood is collected in two 65 mm. tubes, 3 drops going into a tube containing the preserving fluid and approximately 1 cc. being collected in the other tube. A third tube is used to collect blood for the cord Wassermann test. The two small tubes are placed in the medicine glass. The funnel is removed, and the flask is sealed with a rubber cap. Once again the blood is thoroughly agitated with a rotary motion to ensure complete mixing. The flask and each of the little tubes are labeled with the patient's name, date and Wassermann reaction, and all are placed in the ice box. The flask is not opened again until the blood is to be used for a transfusion. Every flask of blood is kept in storage for ten days, and then if its appearance is normal it is ready for use. By normal appearance is meant that the rubber cap shows the presence of a slight vacuum and that the supernatant plasma and preserving fluid are clear yellow with, at most, a just visible tinge of hemolysis immediately above the layer of settled red cells. If either or both are not present, the collection is discarded as possibly contaminated. The ice box that the authors use for storage is so equipped that it maintains a constant temperature between 34 and 35 F. In using the blood for a transfusion, the blood group of the recipient is first determined and then complete cross matching is carried out with each of the desired number of flasks containing blood of the same group. This is done with the small tubes of cells and serum. The compatible flasks of blood are rotated gently to obtain an even suspension and then they are ready for use. It is not necessary to warm the blood before using it, as it will be nearly at room temperature when it enters the patient's vein. Heating preserved blood may be a factor in producing reactions. When the blood is nearly ready, an intravenous infusion of isotonic saline solution is started on the patient, an open buret being used. The prepared blood is poured into the buret through a funnel the top of which is covered by six thicknesses of washed sterile gauze and allowed to run in by gravity. It is more or less characteristic of preserved blood to have a few small soft clots present in the flask. This may be due to the action of small amounts of Wharton's jelly. These are strained out by the gauze. The second flask of blood is poured into the buret when the first has almost completely run in, and the two may be separated by a small amount of saline solution. The speed at which the blood is allowed to flow should be slow at first (from 3 to 5 cc. per minute) but may be increased as the transfusion continues to from 10 to 15 cc. per minute. From their studies the authors find that the labor mechanism of the patient from whom the blood is collected is not affected. Therefore the procedure is not harmful to her. The isotonic preserving solution used will satisfactorily preserve the blood for a period of from eight to ten weeks in a condition suitable for transfusion use.

Effects of Epinephrine and Amphetamine.—Dill and his co-workers compared the effects of epinephrine and amphetamine on the utilization of carbohydrate, the concentration of sugar and lactic acid in blood and of acetone bodies in blood and urine, the oxygen consumption, the acid-base balance, the pulse and the blood pressure. The observations were made over periods of four hours while the subjects, four normal fasting men, were reclining quietly on a bed. In summary the authors state: Intramuscular injections of epinephrine did not change or slightly increased the proportion of carbohydrate utilized during the period in which blood sugar and lactate were elevated. Acetone bodies in the blood and the urine fluctuated within the normal range. Amphetamine did not modify carbohydrate utilization or the concentrations of sugar, lactate or acetone bodies in the blood. It had a calorogenic effect that was smaller in magnitude but more sustained than that of epinephrine. The rise in systolic blood pressure after amphetamine was greater in one subject, and was more sustained than after epinephrine in all subjects. In contrast with epinephrine, amphetamine produced a small but consistent rise in diastolic pressure.

American Journal of Public Health, New York

29: 1193-1282 (Nov.) 1939

- Orientation in Public Health. J. W. Mountin, Washington, D. C.—p. 1193.
- The Problem of Maternity: Survey and Forecast. L. I. Dublin, New York.—p. 1205.
- Industrial Hygiene: Retrospect and Prospect. J. J. Bloomfield, Washington, D. C.—p. 1215.
- Sylvatic Plague. K. F. Meyer, San Francisco.—p. 1225.
- Types of Tubercle Bacilli in Lesions of Garbage-Fed Swine. W. H. Feldman, Rochester, Minn.—p. 1231.
- Methods of Poultry Evisceration and Packing and Their Relation to Health. C. E. Edmunds, Chicago.—p. 1239.
- *Typhoid Fever and Vegetable Juices (Carrot). J. C. Geiger, San Francisco.—p. 1244.
- Outbreak of Staphylococcus Milk Poisoning from Pasteurized Milk. J. F. Hackler, Stillwater, Okla.—p. 1247.
- Comparison of MacConkey's Broth and Standard Lactose Broth as Media for Detection of Coliform Organisms in Water. M. H. McCrady, Montreal.—p. 1250.

Typhoid from Vegetable Juices.—The importance of adequate supervision and control of food manufacturing and dispensing establishments is further emphasized by Geiger, who reports two cases of typhoid. The patients ate their lunch at a common eating place, a food store specializing in the sale of vegetable juices (carrot). The usual routine investigation of the food handlers and the examination of the food products were carried out. The investigation included stool examinations of all known family contacts. The vegetable juices sold by the food store showed a high bacterial count. It was found that pasteurization of these juices had been incompletely carried out, or omitted, in violation of the regulations of the department of public health effective Nov. 3, 1936. The worker recently assigned to the direct preparation and handling of the vegetable juices was found to be a typhoid carrier. Stool specimens were positive for *Eberthella typhosa* on three successive examinations. All other laboratory examinations were negative. This typhoid carrier had worked as a domestic in several families and gave a history of having had typhoid thirty-four years previously. She admitted that the vegetable juices had generally not been pasteurized. The author states in conclusion that the foregoing facts illustrate the necessity for close, frequent and careful supervision by health authorities over food establishments preparing and serving foods of any character, but particularly, as in this instance, unheated or partially heated extracts and juices from vegetables.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

23: 685-848 (Nov.) 1939

- Massive Dose Arsenotherapy of Syphilis by Intravenous Drip Method. H. T. Hyman, L. Chargin and W. Leifer, New York.—p. 685.
- Administrative Problems in Control of Syphilis. R. A. Vonderlehr, Washington, D. C.—p. 692.
- Unsolved Clinical Problems of Syphilology. J. E. Moore, Baltimore.—p. 701.
- Laboratory Problems in Study of Syphilis. H. Eagle, Baltimore.—p. 712.
- Ethionemene: Form of Granuloma Inguinale. A. G. Schoch and L. J. Alexander, Dallas, Texas.—p. 718.
- Lag in Reversal of Blood Serologic Tests Under Bismuth in Course of Combined Chemotherapy. H. Beerman, Philadelphia.—p. 724.
- Comparative Studies in Serologic Methods, with Particular Reference to Kline, Kahn and Kolmer Methods. L. Tuft and Carola E. Richter, Philadelphia.—p. 731.
- Davies-Hinton Test of Spinal Fluid. H. H. Marquis, San Francisco.—p. 738.
- *Peripheral Neuritis During Administration of Sulfanilamide. J. R. Waugh, Norfolk, Va.—p. 745.
- Interstitial Keratitis in Patients with Neurosyphilis of Congenital Origin, with Discussion of Fever as Precipitating Factor of Keratitis in Paretic Variety. I. Kopp and H. C. Solomon, Boston.—p. 751.
- *Studies in Tissue Concentration of Bismuth in Man. J. R. Scholtz and A. L. Chaney, Los Angeles.—p. 759.
- Trisodium Arsenamine Sulfonate (Trisodarsen) in Treatment of Congenital Syphilis: Five Year Study in Treatment of 147 Cases. T. B. Givan and G. Villa, Brooklyn.—p. 771.
- Diagnosis and Therapy of Gastric Crises. D. J. Simons, New York.—p. 782.

Peripheral Neuritis from Sulfanilamide.—Waugh reports a case of peripheral neuritis with foot drop occurring during treatment with sulfanilamide in a case of gonorrhea. Only two other cases of peripheral neuritis and one of optic neuritis occurring during sulfanilamide therapy are to be found in the literature. This case, the author points out, is the only one that has occurred on his service among approximately 650 hospitalized patients who have received intensive sulfanilamide treatment for gonorrhea and other urologic conditions.

Bismuth Concentration in Human Tissues.—Scholtz and Chaney determined the concentration of bismuth in the tissues in fifteen cases of syphilis that came to necropsy. It was known that bismuth compounds were given intramuscularly in all these instances. All of the deaths were due to some acute illness, usually of not more than several weeks' duration, and not from debilitating wasting disease. Therefore there was no shrinkage of organs or tissues which might have had a tendency to concentrate the bismuth in the tissues. The exact amount of bismuth which had been administered was definitely known in half of the cases and in most of the others a minimum was known. All except two of the deaths were due to causes unrelated to bismuth treatment and all but one was unrelated pathologically to syphilis. Two patients died of aplastic anemia due to neoarsphenamine, neither of them having been treated by the authors. The tissue concentration of bismuth in the kidney of the fifteen patients varied from 0.5 to 10 mg. per hundred grams of tissue, in the liver from 0 to 4.5 mg., and in the brain in the two cases in which it was determined the concentration was 0.2 and 0.6 mg. respectively. In several instances large amounts of bismuth were present even though several years elapsed since its last injection. In several instances the concentration of bismuth was greater in cases in which no tissue change was present than in several in which definite lesions present were probably attributable to the bismuth. Therefore it is suggested that bismuth concentration by itself is not the only factor of importance in the production of actual tissue damage and that other factors, such as the time during which bismuth is deposited, may greatly influence the effects which a given amount of the drug may produce. It is urged that physicians make chemical studies of necropsy material from patients who have received bismuth compounds therapeutically. Studies should be made on tissues other than the abdominal viscera. Although study of the viscera is most essential when toxicity is considered, examinations of tissues of the nervous system, heart, aorta, skin, eye and others are particularly important when the concentration of bismuth in the tissues, in relation to therapeutic effect, is considered.

American Review of Tuberculosis, New York

40: 487-606 (Nov.) 1939

- Graphic Tracings of Respiration in Study of Pulmonary Disease. A. Courmand, D. W. Richards Jr. and R. C. Darling, New York.—p. 487.
- Anomalies of Human Respiratory System: Proposed Classification. H. Jordan, Burlington, Vt.—p. 517.
- Cuban National Tuberculosis Case Finding Campaign: I. Introduction and Results of Tuberculin Tests. J. R. Mencia, M. C. Kahn and E. Mayer, New York.—p. 522.
- Id.: II. Results of X-Ray Studies. J. R. Mencia, E. Mayer and M. C. Kahn, New York.—p. 536.
- Evolution of Modern Pneumothorax Machines: II. Fluid-Free Apparatus and Continuous Reversal Apparatus. L. R. Davidson, Staten Island, N. Y.—p. 546.
- Spontaneous Pneumothorax. R. Charr, Philadelphia.—p. 565.
- *Intestinal Tuberculosis and Calcium Gluconate. V. V. Pisani, Chicago.—p. 571.
- Technic of Sputum Examination: Daily Studies of Sputum from Patients with Rare Tubercle Bacilli by Dilution-Flotation Procedure and Guinea Pig Inoculation. J. E. Pottenger, Monrovia, Calif.—p. 581.

Intestinal Tuberculosis and Calcium Gluconate.—Pisani used calcium gluconate in the treatment of forty-three cases of intestinal tuberculosis. The treatment, three weekly intramuscular injections of 10 cc. of a 10 per cent solution of calcium gluconate, extended from six to twenty-five months, with an average of thirteen months. Of the forty-three patients treated, twenty were definitely improved; that is, the major symptoms, such as nausea, vomiting, diarrhea and abdominal cramps, were unmistakably lessened in their severity if not completely absent at the time of the final check up. Minor gastrointestinal complaints, if present, were of a transitory nature. All these patients also showed an improvement in appetite, weight, strength and general appearance. The pulmonary lesions in these cases were found stationary or improved. Thirteen patients were fairly improved; that is, only an attenuation of the entire symptomatology, with appetite, weight, strength and general appearance slightly improved or unchanged, was observed. The pulmonary lesions were slowly progressive; eventually collapse therapy proved to be ineffective. Ten patients were not improved. The disease was not retarded in any way. In instituting the treatment it was fully realized that the intestine and the lungs were so extensively

involved that no known treatment could ever change the course of the disease to the fatal end. Yet these patients were treated so that the effectiveness of the treatment could be evaluated fairly. The clinical observations amply justify the further use of calcium in intestinal tuberculosis. The treatment of intestinal tuberculosis becomes doubly difficult unless the tuberculous pulmonary lesions are under control. As to the healing properties of calcium on the intestinal ulcers, extensive post-mortem observations are needed before definite conclusions can be drawn. The conviction that calcium therapy may be of benefit in intestinal tuberculosis is based on the following considerations: 1. Calcium has antiphlogistic and antispasmodic properties, exerting thereby a favorable influence on the nutritional changes in the tissues. Ulceration is mainly due to such changes. 2. It restores the normal calcium ion concentration of the tissue, decreasing thereby the hydrogen ion concentration, thus creating an environment less favorable for the growth and multiplication of the tubercle bacilli. 3. It stimulates phagocytosis. 4. It stimulates fibrosis. 5. It tends to restore the normal physiology of the intestine by counterbalancing the existing vagotonia through the stimulation of the sympathetic filaments. Such a pharmacologic property alone is sufficient to place calcium as an invaluable adjunct in the treatment of intestinal tuberculosis.

Archives of Surgery, Chicago

39: 901-1076 (Dec.) 1939

- Surgical Aspects of Acute Abdominal Disease in Infancy and in Childhood. C. W. McClughlin Jr. and H. H. Davis, Omaha.—p. 901.
 Supernumerary Breast. T. de Cholnoky, New York.—p. 926.
 Epidural Hemangioma Associated with Hemangioma of Vertebrae: Report of Case. Rolla G. Karshner, C. W. Rand and D. L. Reeves, Los Angeles.—p. 942.
 *Protruded Intervertebral Disk: Report of Case: Note on Possible Inflammatory Etiologic Factor (Circumscribed Arachnoiditis). G. C. Anderson and E. Wexberg, New Orleans.—p. 952.
 Studies in Cross Circulation. H. B. Shumacker Jr., A. Lamont and W. Metcalf, Baltimore.—p. 959.
 Intra-Abdominal Hernia: Report of Case and Review of Literature. G. H. Hansmann and S. A. Morton, Milwaukee.—p. 973.
 Hemangioma of Colon: Report of Case. C. F. Sawyer, Chicago.—p. 987.
 Effects of Estrogen on Bones, Joints and Ligaments of Castrated Guinea Pigs. C. J. Sutro and L. Pomerantz, New York.—p. 992.
 *Respiratory Physiologic Phenomena During Inhalation Anesthesia. E. B. Tuohy, Rochester, Minn.—p. 1001.
 Intra-Abdominal Pressure: Critical Review and Experimental Study. C. R. Lam, Detroit.—p. 1006.
 Appendical Stump: Its Manner of Healing in Open and in Closed Method of Treatment. I. Kross, New York.—p. 1016.
 Transplanted Epiphyseal Cartilage. J. D. Bisgard, Omaha.—p. 1028.
 Intussusception Due to Hemangioma of Jejunum. F. T. Merchant, Montreal.—p. 1031.
 Production of Experimental Tumors of Brain with Shope Rabbit Papilloma II. B. Woodhall and R. W. Graves, Durham, N. C.—p. 1041.
 Seventieth Report of Progress in Orthopedic Surgery. J. G. Kuhns, S. M. Roberts, R. J. Joplin, W. A. Elliston, G. Bailey, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and F. E. Ilfeld, Los Angeles.—p. 1049.

Protruded Intervertebral Disk.—Anderson and Wexberg report a case in which protrusion of the fourth intervertebral disk, with consecutive circumscribed spinal meningitis, gave rise to symptoms simulating those of a tumor of the cauda equina. Incision of the meningitic cyst and excision of the protruding disk brought about recovery. This case and a few similar cases recorded in the literature suggest that a distinction is justified between cases of lumbar or sciatic radiculitis caused by the pressure of a protruding intervertebral disk and cases of compression of the cauda equina by a meningitic cyst which has developed from the mechanical irritation produced by the protrusion of an intervertebral disk.

Respiration and Inhalation Anesthesia.—Tuohy discusses some of the important features of anesthesia induced by various gases from the standpoint of preoperative medication. He believes that the dose of any drug, especially when used for premedication purposes, should be sufficient to produce a safe pharmacologic effect. As the basal metabolic rates of patients vary widely, the different drugs vary diversely in the intensity of their action. To certain patients small doses of the drug should be administered preoperatively and then repeated whenever necessary to produce the desired effect. In most instances an inhalation anesthetic should not be started until a reasonable time has been allowed for the agents given orally and hypodermically to produce their optimal effect. The mechanism of

inhalation anesthesia is complex and depends on many factors, some of which are the physical laws which determine diffusion of gas and vapors and the anatomic, physiologic and chemical considerations incident to respiration. The ultimate aim in administration of any anesthetic, especially an inhalation anesthetic, is the introduction of the agent into the tissues by way of the blood stream with the least possible disturbance to normal physiologic processes. Obstruction of the air passages or depression of breathing to such an extent that an adequate exchange of gases in the lungs is not possible definitely curtails the success of the anesthetic procedure. In the absence of respiratory obstruction there are certain other factors which influence physiologically the activity of respiration. These are chiefly of two types: chemical agents and afferent nerve impulses. The respiratory signs of anesthesia are tremendously important and deserve as much consideration as any one physical sign that may be demonstrated during inhalation anesthesia. Except in certain circumstances, vasomotor and cardiovascular aberrations usually occur simultaneously with respiratory changes or inadequacies, and one should be alert to detect depressions in blood pressure, alterations in pulse rate and other signs of impending shock. In the event of respiratory and circulatory depression during inhalation anesthesia, its administration should be discontinued and the patient's lungs ventilated with oxygen, either by manual compression with the use of the breathing bag or by puncture pressure with the aid of an intratracheal tube. The practice of simultaneously administering fluids intravenously when the systolic blood pressure is falling is almost unquestioned. Such an agent as saline solution, dextrose and saline solution, solution of acacia or whole blood should be used. In many cases of impending shock with a marked degree of vasoconstriction it is not wise to administer a vasoconstrictor agent when the blood vessels are already markedly constricted. It is much more advantageous to restore the circulatory blood volume by means of intravenous administration of fluids, preferably blood, in order to ensure a medium on which the heart can work. The opportune moment for the use of vasomotor agents is when the systolic blood pressure has not fallen below 70 or 80 mm. of mercury. When vasoconstrictors are administered sufficiently early the vasomotor tone and the systolic pressure can be maintained for a reasonable time, at least long enough to permit relatively simple venipuncture. Factors other than the anesthetic which influence or hasten so-called surgical shock are hemorrhage, loss of heat, sweating, trauma to tissues and duration of the surgical procedure.

Illinois Medical Journal, Chicago

76: 393-488 (Nov.) 1939

- Diagnosis in Acute Pneumonias. C. N. Hamlin, Rockford.—p. 413.
 General Management of Pneumonia. M. H. Barker, Chicago.—p. 416.
 Serum and Drug Therapy in Pneumococcal Pneumonia. I. F. Velini, R. O. Levitt and N. L. Campione, Chicago.—p. 420.
 Roentgen Rays in Management of Pneumonias. E. L. Rypins, Bloomington.—p. 424.
 Pneumonia in Childhood. W. M. Whitaker, Quincy.—p. 426.
 Dissemination and Control of Bacillary Dysentery. L. H. Block, Chicago; A. Tarnowski, Dixon, and B. L. Greene, Elgin.—p. 435.
 Colloidal Aluminum Hydroxide "Continuous Drop" in Treatment of Large Gastric Ulcers: Therapeutic and Diagnostic Value of This Method. F. Steigmann, Chicago.—p. 443.
 *Treatment of Portwine Birthmarks (Naevus Flammeus) by Grenz Rays. C. White, Chicago.—p. 449.
 True Knotting of Umbilical Cord. A. T. Lundgren and W. A. Brice, Chicago.—p. 451.
 *Subclinical Pellagra in the Chicago Area; Its Incidence Among Cases Admitted to a Private Sanatorium. V. L. Evans, Aurora.—p. 459.
 Fibroids of Uterus: Analysis of 300 Consecutive Patients Operated on by Members of Gynecologic Staff of a Large Charity Hospital. A. E. Kanter and A. H. Klawans, Chicago.—p. 459.
 Multiple Unilateral Cranial Nerve Paralysis: Report of Two Cases Due to Suppuration in Presence of Diabetes. T. T. Stone and A. J. Arieff, Chicago.—p. 465.
 What Constitutes a Psychiatric Problem in General Practice. Frances Hannett and M. Gitelson, Chicago.—p. 468.
 Operative Treatment of Fractures. P. B. Magnuson, Chicago.—p. 475.
 Massive Hemorrhage from Episiotomy. C. Finkelstein, Chicago.—p. 482.

Portwine Birthmarks and Grenz Rays.—White points out that repeated treatments with the Grenz rays or soft x-rays will produce a definite bleaching in so-called portwine birthmarks. Up to this time there has been no form of treatment that could be used without danger in capillary birthmarks of this type. His experience has been limited to eight cases, all of adults in whom the birthmark has been present for many

years. With treatments extending over three to nine months given every two weeks, lesions have shown marked bleaching and, in the main, results have been most satisfactory.

Subclinical Pellagra in Chicago Area.—Evans contends that there are many cases of subclinical pellagra which occur in other states than those of the South, and in other population groups. During 1938 a diagnosis of pellagra was made in thirteen of 205 cases at a private institution for nervous and mental diseases populated by patients from the Chicago metropolitan area. In none of these cases was the pellagra of a frank, classic type, but the prompt response of the physical symptoms (glossitis, stomatitis, weakness, irritability, insomnia, abdominal pain and so on) to nicotinic acid established the diagnosis. In all but two of the thirteen cases, pellagra was only a secondary diagnosis. These persons were suffering from mental diseases unrelated to pellagra, and although the physical symptoms of pellagra promptly responded to nicotinic acid there was no marked change in the mental condition. The other two patients appeared to have pellagra psychosis as their chief trouble and recovery was prompt after nicotinic acid was administered.

Journal of Allergy, St. Louis

11: 1-108 (Nov.) 1939

- Observations on Total Water and Sodium Exchanges in Asthmatic Patients. J. Sheldon, H. Howes and G. Stuart, Ann Arbor, Mich.—p. 1.
Thermolability of Ragweed Pollen Extract and Its Corresponding Reagin. C. E. Arbesman and H. Eagle, Baltimore.—p. 18.
Time Required for Production of Hay Fever by Newly Encountered Pollen, Sugar Beet. E. W. Phillips, Phoenix, Ariz.—p. 28.
Transference of Reagents in Blood Transfusions. W. P. Garver, Cleveland.—p. 32.
*Attempts to Detect Reaction Between Human Allergic Serum and Its Antigen. J. M. Newell, Philadelphia.—p. 35.
Note on Oral Potassium Chloride Therapy in Asthma, Hay Fever, Urticaria and Eczema. D. Harley, London, England.—p. 38.

Reaction Between Human Allergic Serum and Its Antigen.—Mixtures of a serum from a human being sensitive to rabbit hair and rabbit serum were made with these antigens, and Newell studied the mixtures by means of an air-driven ultracentrifuge and the Tiselius electrophoresis apparatus to detect evidences of physical reaction between the antibody and the antigen. No such evidence could be found under the conditions of the experiments. These negative observations support the belief that in human allergy there is no physical reaction between the antibody and its antigen in the blood.

Journal of Nervous and Mental Disease, New York

90: 569-708 (Nov.) 1939

- Observations on Role of Vitamin B₁ in Etiology and Treatment of Korsakoff Psychosis. K. M. Bowman, R. Goodhart and N. Jolliffe, New York.—p. 569.
Role of Central Nervous System in Functional Endocrinopathies. A. O. Hecker, Woodville, Pa.—p. 576.
*Studies in Delayed Awakening in Insulin Shock Therapy (Sakel): I. Hiccups as a Sign of Impending Complications. G. W. Robinson, G. W. Robinson Jr. and Dorothy Feaster, Kansas City, Mo.—p. 590.
Hemato-Encephalic Barrier: I. Study of Clinical Aspects and Mechanism of Development of Hypertension of Cerebrospinal Fluid in Hypertensive Disease. M. M. Kessler, E. Moschowitz and N. Savitsky, New York.—p. 594.
Further Contribution to Subject of Frontal Ataxia: III. A. Gordon, Philadelphia.—p. 614.

Hiccups as Sign of Complications in Shock Therapy.

—According to Robinson and his co-workers, the staff of the Neurological Hospital has come to feel that hiccups during hypoglycemic shock (Sakel) is evidence of impending complications. In more than 1,000 insulin treatments with resulting hypoglycemic reactions there were seven instances of delayed awakening, or so-called delayed shock. There have been many theories as to the possible causes of delayed awakening, but no satisfactory explanation has been given as to its actual cause. The authors feel that certain pathologic changes develop in the central nervous system which are slowly reversible or irreversible. This phenomenon is compared to changes occurring in the brain following anoxemia. Since dextrose is just as important to the life of the ganglion cell as oxygen, it is conceivable that at times the same changes occur in the brains of insulin shock patients as are found in asphyxia. It is assumed that, in delayed shock with recovery, few if any cells are lost through ischemic degeneration; nevertheless refractory delayed awaken-

ing, especially with convulsions, should be considered proof that widespread pathologic changes have occurred in the brain. This assumption is confirmed by Weil and his associates (1938). In each of their seven cases of refractory delayed awakening the authors observed that at some time during shock the patient has hiccupped a number of times. To date this has been the only consistent sign that they noticed which might indicate refractory delayed awakening. Some of their patients hiccupped without delayed shock, but they have not had a patient with these diaphragmatic spasms without some resulting difficulty. Kuntz says that hiccupping is a diaphragmatic spasm due to some reflex irritation of the phrenic nerve. Since the changes incurred during coma apparently maintain a slowly reversible state during refractory delayed awakening and are manifested by deep frequent respirations, increased pulse rate and a constant increased blood pressure level, some of these changes probably affect the medulla oblongata. This being the case, the presence of hiccups means that there is some disturbing change going on within the medulla oblongata that may take on an irreversible character if the insulin reaction is not terminated at once.

Journal of Pediatrics, St. Louis

15: 613-744 (Nov.) 1939

- Pneumonia in Infants and Children. B. W. Carey and T. B. Cooley, Detroit.—p. 613.
*Localized Bullous Emphysema Associated with Pneumonia in Children. B. Benjamin and A. E. Childe, Montreal.—p. 621.
*Original Method of Obtaining Sputum from Infants and Children, with Reference to Incidence of Pneumococci in Nasopharynx. W. J. Auger, Toronto.—p. 640.
*Results of Typing Pneumococci from Sputum from 450 Cases of Pneumonia Among Infants and Children. W. J. Auger, Toronto.—p. 646.
Intramuscular Administration of Antipneumococcus Serum in Infants and Children. L. Krahulik, V. Rudomanski and G. Cunningham, Brooklyn.—p. 650.
Icterus Gravis Neonatorum. R. A. Strong and H. P. Marks, New Orleans.—p. 658.
Bacteriologic Study of 100 Stillborn and Dead Newborn Infants. Alice Brim, Atlanta, Ga.—p. 680.
Potential Dangers of Tuberculin Tests. Edith M. Lincoln and W. Grethmann, New York.—p. 682.
*Climatic Factor in Precipitating Acute Tonsillitis in Children. N. D. Fabricant, Chicago.—p. 697.
Respiratory Infections: Incidence and Clinical Course as Observed in a Florida Pediatrics Practice. W. W. Quillian, Coral Gables, Fla.—p. 704.
In Vitro Effect of Pectin and Nickel Pectin on Bacterial Growth. P. S. Prickett and N. J. Miller, Evansville, Ind.—p. 710.
Unusual Case of Ephedrine Poisoning. J. H. Lapin and M. Weichsel, New York.—p. 722.
Fatal Lead Poisoning in Nursing Infant Due to Prolonged Use of Lead Nipple Shields. M. H. Bass and S. Blumenthal, New York.—p. 724.
Ritter's Disease: Review of Literature with Report of Case. N. Kendall and E. E. Aegerter, Philadelphia.—p. 733.
Leukemoid Reaction with Sulfapyridine. E. E. Moody and E. G. Knouf, Los Angeles.—p. 740.

Localized Bullous Emphysema and Pneumonia.—In the last six years Benjamin and Childe encountered nineteen typical instances in children in whom localized emphysematous air spaces were associated with pneumonia. In most of these there was some degree of pleurisy, which was quite often localized in the region containing the bullous emphysema. Two of the children had empyema and in two others pneumothorax developed, resulting from rupture of the pleura over the bullous emphysematous space. The typical appearance of localized bullous emphysema in the roentgenogram consists of a thin, rather sharply defined, smooth shadow, almost like a white pencil line, surrounding an air-filled space of decreased density in which lung markings are diminished or absent. Occasionally the emphysematous spaces contain a small amount of fluid and show a straight line fluid level in the upright position. They do not persist but vary in size from time to time until they disappear. The shortest period over which one was visible was seven days, and the longest period ten months. This patient is still under observation. He is entirely well clinically. It has not been possible to follow one patient, but roentgenograms of the remaining seventeen taken at intervals show eventual complete clearing. The authors believe that localized bullous emphysema associated with pneumonia is common enough to warrant a complete description in all volumes dealing with the diagnosis of diseases of the lung in infants and children. The term "cyst" or "cystic" should not be applied to this condition. In contrast, true congenital pulmonary air cyst is rarely encountered. The differential diagnosis between bullous emphysema and lung

abscess, localized pneumothorax, congenital pulmonary air cyst and diaphragmatic hernia is not difficult if the course of the case can be followed for a short time. No treatment is necessary unless complicating conditions ensue.

Obtaining Sputum from Children.—Auger devised a method of obtaining sputum from infants and children which obviates the difficulties of other procedures. The method consists of aspirating sputum from the throat while the child coughs. The apparatus, when assembled, consists of a catheter to enter the child's throat, a glass tube connection for the observation of the sputum, a valve to permit alternate suction and escape of air from the syringe and an ordinary 50 cc. syringe to provide the suction. During the past year sputum from the 450 patients with pneumonia admitted to the wards of the Hospital for Sick Children has been examined by the suction method. Pneumococci were present in 83.3 per cent of the sputums. The most common types were I, II, XIX, XIV and XVIII in children more than 2 years of age and types XIX, XIV and untypable pneumococci in children less than 2 years of age. Empyema developed in 20 per cent of the patients with early type I pneumonia who received no specific treatment, in 16 per cent given serum therapy and in only 8 per cent treated with sulfapyridine. The mortality rate was extremely high for infants less than 1 year of age, especially when the pneumonia was due either to the pneumococcus plus another pathogen or to an organism other than the pneumococcus. *Staphylococcus aureus* was the cause of death of 58.3 per cent of the infants less than 1 year of age when the pneumonia was due to an organism other than the pneumococcus.

Climate and Tonsillitis.—Fabricant discusses the climatic factor as a precipitating cause of severe tonsillitis. He presents nineteen cases of acute tonsillitis in children ranging in age from 1 to 10 years. Each child was sufficiently ill to warrant hospitalization, and the onset of the cold front precipitated the disease in each instance. Although scores of patients with acute tonsillitis were seen, only these nineteen were regarded as sufficiently ill to require hospitalization. For purposes of simplification in this study the author regards the high and low range of the daily temperature as an adequate index of meteorologic change. The cold front, a sudden fall in air temperature, is usually associated with the passage of a polar air mass. This brings with it not only a change in temperature but lessened humidity and an increase in barometric pressure. The precipitation of disease takes place in the wake of a cold front. At such a time there is a change in the functional status of the mucous membranes of the nose and throat. A latent period or "lag" of a few hours to one or more days may occur before clinical symptoms are observed. Although one cold front may be passed without incurring harm, the superimposed cold front often results in damage, especially when the second insult, striking the individual before adequate recovery has been possible, may contribute to further biologic instability. The infall of cold air is pathogenic either directly because of the meteorologically induced vascular spasm or indirectly because of changes following in the wake of the vascular spasm.

New England Journal of Medicine, Boston

221: 801-844 (Nov. 23) 1939

- Radiotherapy for Inflammatory Conditions. A. U. Desjardins, Rochester, Minn.—p. 801.
 • Sulfanilamide in Treatment of Erysipelas. L. A. Rantz and C. S. Keefer, Boston.—p. 809.
 Suppression of Urine Complicating Pyelography. W. C. Quinby and G. Austen Jr., Boston.—p. 814.
 Neurosyphilis and Its Treatment. H. H. Merritt, Boston.—p. 817.
 Diseases of Thyroid Gland. J. H. Means, Boston.—p. 820.

Sulfanilamide in Erysipelas.—Rantz and Keefer studied without special selection all patients admitted to the male wards of the Boston City Hospital with a diagnosis of facial erysipelas from October 1937 to June 1939, forty-two in all. As a control, they viewed the records of forty-three similar patients admitted during 1936 and 1937 before the use of sulfanilamide was instituted. All received a standard therapy consisting of bed rest, fluids, sedatives and cold magnesium sulfate compresses on the affected areas. Those to whom sulfanilamide was administered received as a routine 6 or 8 Gm. by mouth in the first twenty-four hours, with a maintenance dose of from 3 to 5 Gm. a day thereafter. As criteria for the evaluation of the effect of the

drug, the authors considered the duration of fever, the incidence of complications and the mortality. If the time of institution of the sulfanilamide therapy is considered in relation to the onset of the disease, it is found that of twenty-one patients treated on or before the third day of illness the total febrile course averaged 5.2 days, with an average of 3.0 days after beginning the drug. In cases in which the drug was given after the third day, fever persisted for an average of 9.1 days and subsided in an average of 4.2 days after the onset of medication. The total duration of fever was therefore markedly shortened of patients treated on or before the third day of the illness. It has little effect after this interval. This is to be expected, because by the fourth day usually the local lesions are fully developed and relief by the natural mechanisms of the body must be awaited. Complications occur frequently in the treated cases, but less often in those treated early. Recurrences and relapses occur among the treated cases as often as among the untreated group.

New Jersey Medical Society Journal, Trenton

36: 633-694 (Nov.) 1939

- X-Ray Localization of Intra-Ocular Foreign Bodies from Point of View of the Ophthalmologist. A. R. Sherman, Newark.—p. 637.
 Surgery of Rectum and Colon. B. B. Ranson Jr., East Orange.—p. 640.
 Recent Advances in Study of Pneumonia. R. A. Kilduffe, Atlantic City.—p. 646.
 Is Respiratory Infection an Etiologic Factor in Bronchial Asthma? H. L. Rogers, Riverton.—p. 650.
 Acute Suppurative Mediastinitis: Report of Case. H. A. Brodtkin, Newark.—p. 653.
 Tibial Bone Graft for Clavicular Defect: Report of Case. H. Briggs, Orange.—p. 655.
 Constitutional Inadequacy. W. C. Alvarez, Rochester, Minn.—p. 658.

New York State Journal of Medicine, New York

39: 2081-2154 (Nov. 15) 1939

- Ureteral Calculi: Review of 350 Cases. C. C. Higgins, Cleveland.—p. 2085.
 Clinical Application of Studies in Resuscitation. W. Dranower, New York.—p. 2094.
 The Problem of the Schizophrenic and Effects of Newer Forms of Treatment. B. Pollack, Rochester.—p. 2100.
 Some Unusual Conditions Met by the Otologist. J. D. Carroll, Troy.—p. 2110.
 Surgical Treatment of Chronic Arthritis. S. Selig, New York.—p. 2114.
 Present Status of Arthroplasty. F. H. Albee, New York, and Venice, Fla.—p. 2118.
 Use of Synovectomy in Chronic Arthritis. P. P. Swett, Hartford, Conn.—p. 2125.
 Arthrodesis in Charcot's Knees. J. C. McCauley Jr., New York.—p. 2132.

Northwest Medicine, Seattle

38: 409-454 (Nov.) 1939

- Obscure Brain Tumors and Functional Psychoses: Hazards in Their Differentiation. M. M. Campbell and K. E. Hynes, Sedro-Woolley, Wash.—p. 412.
 Bronchoscopy: General Considerations. P. Bailey, Portland, Ore.—p. 416.
 Peritoneoscopy: Advance in Intra-Abdominal Diagnosis. P. E. Spangler, Portland, Ore.—p. 418.
 Diseases of Accessible Oral Mucosa and Circumoral Areas. C. J. White, Chicago.—p. 421.
 Unusual Appendix. J. V. Barrow, Los Angeles.—p. 424.
 Choice of Cesarean Section in Infected Patients. P. R. Rollins, Seattle.—p. 427.
 Amebiasis: Study of Cases in Upper Willamette Valley. E. D. Furrer, Eugene, Ore.—p. 429.

Ohio State Medical Journal, Columbus

35: 1153-1264 (Nov.) 1939

- Preoperative and Postoperative Care. E. C. Cutler, Boston.—p. 1169.
 Review of 141 Consecutive Cases of Massive Hemorrhage from Upper Gastrointestinal Tract. E. N. Collins and R. S. Knowlton, Cleveland.—p. 1175.
 Congenital Heart Disease. F. C. Clifford, Toledo.—p. 1181.
 Differential Diagnosis of Cough. G. L. King, Alliance.—p. 1183.
 Advising the Public. C. A. Wilzbach, Cincinnati.—p. 1190.
 Objective Assessment of the Allergic Child. S. Cohen, New Orleans.—p. 1193.
 • Bulgarian Belladonna Treatment of Postencephalitic Parkinsonian Syndrome. H. D. Fabing, Cincinnati.—p. 1195.
 Time of Fertility and Sterility During Human Menstrual Cycle. T. T. Zuck, Cleveland.—p. 1200.
 Sulfanilamide and the Negro. M. A. Schnitker, Toledo.—p. 1204.
 Rocky Mountain Spotted Fever in Ohio: Report of Case. N. Skispiro and W. F. Ashe, Cincinnati.—p. 1206.
 Insulin as Substitute for Tube Feeding. J. Smith, Schrieng.—p. 1210.
 • Bulgarian Belladonna for Postencephalitic Parkinsonism.—Fabing gave fourteen patients, totally incapacitated by parkinsonism, a wine extract of Bulgarian belladonna. No other medications were employed during the course of observations, which extended from May 15, 1938, to May 1, 1939. It was

necessary to decrease the dosage after building it up to the point at which side reactions occurred. During the year nine other patients have been observed for a period exceeding six months. The results were impressive but not as good as those reported by a few other workers. The subjective state of all patients was improved. Symptoms most improved were those of rigidity, salivation and postural disturbances. Palpebral spasms were markedly improved in two instances and completely relieved in a third. The two patients having oculogyric crises were totally relieved. Nine patients were markedly improved, seven moderately, six slightly and one not at all. Improvement began to occur anywhere from the third to seventh day after medication was begun. In all cases the greatest gain seemed to occur within the first two or three weeks, after which time the rate of improvement decreased rapidly. The dosage finally tolerated varied through a remarkably wide range of from 8 to 48 Gm. twice daily. Toxic reactions were primarily a dizziness or light headedness (usually described as a drunken feeling in the head), dryness of the mouth and passages of the upper respiratory tract, drowsiness and occasionally nausea and vomiting. Transient confusion and hallucinosis occurred occasionally. One patient died of a typical heat stroke. Postmortem examination was not permitted. It is conceivable that the belladonna alkaloids may have impaired his sweat mechanism and thus predisposed him to heat stroke. There appears to be no necessity to confine the medication to administration twice daily, as has been suggested. It seems that many patients can tolerate the drug better if it is given in smaller doses at more frequent intervals. No dietary restrictions seem necessary, but all patients report that alcoholic drinks cannot be tolerated with the drug. Hard lemon-flavored candy drops have proved best in the author's experience in combating dryness of the mouth. It is impossible to state which patients will respond best to the treatment, but it is generally those less than 40 years of age, those whose symptoms have been present but a few years, those with marked rigidity and little tremor and those who can tolerate large quantities of the drug. Those with unilateral involvement usually do well also. Mental symptoms which occasionally accompany the parkinsonian syndrome respond variously to the drug. One young man with severe anxiety states but mild parkinsonism has been completely relieved, whereas a girl with impulsive behavior continues to be a problem to her family.

Pennsylvania Medical Journal, Harrisburg

43: 113-208 (Nov.) 1939

- Clinical Significance of Prothrombin as Factor in Hemorrhage. A. J. Quick, Milwaukee.—p. 125.
Management of Acute Abdominal Condition. R. L. Schaeffer, Allentown.—p. 131.
Vaginal versus Abdominal Hysterectomy. L. Averett, Philadelphia.—p. 136.
Chyle Ascites and Other Disturbances of Chyle System. N. P. Davis, Pittsburgh.—p. 142.
Fractures in Region of Ankle Joint. W. D. Griesemer, Reading.—p. 145.
Factors Influencing Results in Varicose Vein Therapy. E. F. McLaughlin, Philadelphia.—p. 150.
Value of Osteoplastic Flaps in Cleft Palate Repair. W. B. Davis, Philadelphia.—p. 153.

Public Health Reports, Washington, D. C.

54: 1965-2004 (Nov. 3) 1939

- Disabling Morbidity and Mortality Among White and Negro Male Employees in the Slaughter and Meat Packing Industry, 1930-1934, Inclusive. H. P. Brinton.—p. 1965.
Presence of Histamine in Platelets of Rabbit. L. Zon, E. T. Ceder and Catherine W. Crigler.—p. 1978.
Susceptibility of Five Inbred Strains of Mice to Liver Changes Induced by Subcutaneous Injection of 2-Amino-5-Azotoluene. H. B. Ander-vont.—p. 1986.

54: 2005-2034 (Nov. 10) 1939

- Studies on Oxyuriasis: XIV. Controlled Tests with Various Methods of Therapy. W. H. Wright, F. J. Brady and J. Bozicevich.—p. 2005.
Significance of Excretion of Lead in Urine. L. T. Fairhall and R. R. Sayers.—p. 2016.
Siphonaptera: Notes on Synonymy of North American Species of Genus Hoplopsyllus Baker. G. M. Kohls.—p. 2019.
Id.: List of Alaskan Fleas. W. L. Jellison and G. M. Kohls.—p. 2020.

54: 2035-2076 (Nov. 17) 1939

- Nursing Accomplishments as Revealed by Case Records. M. Derryberry.—p. 2035.
Histopathologic Changes in Mice Inoculated with Influenza Virus. A. A. Nelson and J. W. Oliphant.—p. 2044.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

14: 1-88 (March) 1939

- Observations on Descent of Testicle, with Special Reference to Spontaneous Descent at Puberty. R. E. Smith.—p. 1.
Cardiomegalia Glycogenica Circumscripta. S. van Creveld and H. M. van der Linde.—p. 14.
Transient Lung Consolidation in Asthmatic Children, with Reference to Eosinophilia. B. Söderling.—p. 22.
*Relationship Between Acute Rheumatism and Streptococcus Antifibrinolysin. C. B. Perry.—p. 32.
Statistical Note on Gastrointestinal Disorders in Infants. M. D. Baber.—p. 40.
Apple Treatment of Infantile Diarrhea. W. Sheldon and Marcia Hall.—p. 43.
*Vitamin-Resistant Rickets. A. M. Gill.—p. 50.

Acute Rheumatism and Streptococcus Antifibrinolysin.

—To determine the relation of the development of antifibrinolysin to the onset of acute rheumatism, Perry studied the antifibrinolysin content of the blood of seventy-five children during acute attacks of rheumatism, during convalescence and following hemolytic streptococcus infections of the upper respiratory tract. Fifty-seven acute episodes were observed in forty-four cases of acute rheumatism and carditis. Thirty-three of these forty-four patients showed resistance to fibrinolysin during the acute stage. In ten antifibrinolysin was present in two attacks and in the two with three attacks antifibrinolysin was present in all. One patient seen early and right through one attack showed no resistance to fibrinolysin, yet in a subsequent attack this was well marked but lasted less than a month. Thus in fifty-seven attacks of rheumatism antifibrinolysin was present in forty-five. No obvious difference could be detected in those who showed antifibrinolysin and those in whom this was absent. Thus of these forty-four cases 78 per cent showed resistance to fibrinolysin in the acute phase of the disease. This is similar to the 75 per cent of normal people developing antifibrinolysin following uncomplicated streptococcal infection, giving strong presumptive evidence that attacks of acute rheumatism are preceded, in the majority of cases, by a hemolytic streptococcus infection even if this is unrecognized. However, it is clear that the development of antifibrinolysin is not an essential part of the rheumatic process even in the same child. Of six patients with chorea but no carditis only one showed antifibrinolysin at the onset of the chorea, and this lasted for less than a month. Fourteen children with chronic but quiescent rheumatic heart disease and one with chorea of long standing were suffering from hemolytic streptococcus sore throat while under observation. They had no definite recurrence of rheumatic infection, but five of the fourteen patients with carditis showed a rise in the sleeping pulse rate which lasted from seven to twenty-one days and which occurred from fourteen days to two months after the sore throat. Of the fifteen cases in only two did antifibrinolysin follow the attack. In thirteen no resistance to fibrinolysin developed. In three of these resistance had been well marked in the antecedent attack of rheumatism, as was also the case of the child with chorea. These fifteen patients received acetylsalicylic acid for six weeks following the sore throat in an attempt to prevent a relapse of rheumatism. Of ten children with carditis who were observed during a quiescent period and who had a hemolytic streptococcus sore throat followed by a rheumatic relapse, resistance to antifibrinolysin developed in six at the same time as the attack of rheumatism. This was severe in all six and also fatal in two. The four who failed to show antifibrinolysin had a mild rheumatic relapse. These four patients received acetylsalicylic acid, whereas only two of the six patients in whom antifibrinolysin appeared were given it. These observations are at variance with Stuart-Harris's observation that resistance to fibrinolysin develops with marked frequency in rheumatic children following a streptococcal sore throat. Schlesinger (1937) suggested that the administration of salicylates to rheumatic children following a hemolytic streptococcus sore throat tends to prevent relapses. Whether this view is correct or not, the present study indicates that it does tend to inhibit antifibrinolysin formation. This possible action of the salicylates in inhibiting antibody formation merits further investigation.

Vitamin-Resistant Rickets.—Gill reports four cases of rickets (three of a mother [healed] and her two child daughters) in none of which was there any evidence of malnutrition, lack of sunlight, calcium drain or celiac or renal disease and in none of which did any of the known forms of therapy (ultraviolet radiation, vitamin D and calcium gluconate) given over a period of several years produce evidence of healing. In this type of case, healing occurs spontaneously when growth ceases. It is suggested that the fault may be a failure of utilization at the site of osseous growth.

British Journal of Children's Diseases, London

36: 251-334 (Oct.-Dec.) 1939

- Observations on 1,136 Cases of Enlarged Tonsils and Adenoids. C. Rolleston.—p. 251.
Von Gierke's Disease. F. R. B. Atkinson.—p. 261.
Congenital Abnormalities of Gallbladder and Extrahepatic Ducts: Review of 245 Reported Cases with Reports of Thirty-One Unpublished Cases. E. Stolking.—p. 295.

British Medical Journal, London

2: 1029-1072 (Nov. 25) 1939

- *Classification of Noninfective Enlargement of Lymph Nodes. Joan M. Ross.—p. 1029.
Value of Therapeutic Measures in Duodenal Ulceration. J. Ronald.—p. 1033.
Estimation of Blood Sugar by the Practitioner: Modification of Folin and Wu's Method. H. R. Millar.—p. 1035.
*Serologic Groups and Types of Streptococci Isolated from Excised Tonsils. E. V. Keogh, I. Macdonald, Joan Battle, R. T. Simmons and S. Williams.—p. 1036.
Retropulsion of Nucleus Pulposus: Critical Review. S. Pappworth.—p. 1038.

Noninfective Enlargement of Lymph Nodes.—Ross states that the noninfective enlargements of the lymph nodes are essentially hyperplasias or neoplasms of the reticulum or its derivative cells. The term "reticulosis" should be used for those diseases in which there is systematized hyperplasia of differentiated or undifferentiated mesenchymal cells leading to generalized enlargement of the lymph nodes, the spleen and the liver, with alteration of the bone marrow. The recently acquired knowledge of the existence of the undifferentiated mesenchymal cell and its capacity for differentiation aids in classification. The unknown factor stimulating hyperplasia of any cell elements does not necessarily inhibit differentiation of that cell, although it may determine the line of differentiation which the hyperplastic cell may follow. The classification proposed assumes that any one of the unknown etiologic factors will act on medulla or follicle or sinus, since action at such sites has been established for the known etiologic agents producing changes in the lymphatic glands (syphilis and the like). In medullary reticulosis the proliferating cells arise in the medulla of the lymph gland, spleen and bone marrow. In follicular reticulosis the follicles of the lymph gland are affected and the proliferating cells have a follicular arrangement. In sinus reticulosis hyperplasia affects the littoral cells lining the lymphatic sinuses of the lymph glands and the venous sinuses of the liver, spleen and bone marrow. Subdivisions can then be made in these groups according to the types of cells produced. Primary neoplasms, such as reticulosarcomas, are also a cause of noninfective enlargements of the lymph nodes. The object of the author's classification is to assist in the search for an etiologic factor and to provide a basis for information as to prognosis and the result of treatment.

Types of Streptococci from Excised Tonsils.—Keogh and his collaborators isolated hemolytic streptococci from 259 of 378 pairs of tonsils (68.5 per cent) removed at operation. The strains belonged to the following Lancefield groups: group A, 189 (50 per cent); group B, twenty-one (5.5 per cent); group C, thirty-three (8.7 per cent); group G, twenty-eight (7.4 per cent). In twelve cases two different strains were present. This incidence of group A strains in the removed tonsils is ten times higher than that isolated from throat swabs of healthy children and adults, which was 4.5 per cent for group A and 13.1 per cent for the other groups. The preponderance of pathogenic strains of hemolytic streptococci (group A) in removed tonsils seems to support the clinical indications for tonsillectomy. It can be argued that, given time, the natural resistance of the children would have succeeded in eliminating the streptococci; but, in the three instances in which there is certain evidence of the date of the original infection, the cocci were still present in

large numbers at operation from four to five months later. In the rest of the series from four to eight weeks usually elapsed between the recommendation for operation and its performance, and in most cases symptoms had been present for weeks or months before operation was advised; therefore the presumption is that if these symptoms were due to streptococcal infection of the tonsils spontaneous cure had not occurred. Chronic streptococcus carriers must menace the health of other children. The authors know of instances in which such carriers have caused cases of scarlet fever. The authors do not wish the foregoing to be construed as a panegyric on routine tonsillectomy.

Journal of Pathology and Bacteriology, Edinburgh

49: 457-608 (Nov.) 1939

- Characters and Systematic Position of Morgan's Bacillus. A. Sevin and R. Buttiaux.—p. 457.
Desiccation of Filtrable Tumors and Other Biologic Materials. R. Knov.—p. 467.
Early Stages of Apical Scar Development. J. Davson.—p. 483.
Structure and Mode of Growth of Bacterial Colonies Morphologically Intermediate Between R and S. Forms. K. A. Bisset.—p. 491.
Immunologic Experiments with Highly Concentrated Suspensions of Rous I Tumor-Producing Agent. C. R. Amies and J. G. Carr.—p. 497.
*Pathogenicity of Bacterium Alkalescens. D. Nabarro and D. G. Edwards.—p. 515.
Toxicity of Indene. G. R. Cameron and Cecile R. Doniger.—p. 529.
Nonsaccharolytic Plectridial Anaerobes. J. D. MacLennan.—p. 535.
Effect of Blood Digest and Haem on Growth of Corynebacterium Diphtheriae. V. Glass.—p. 549.
Toxin of Bacillus Parapertussis and Relationship of This Organism to Haemophilus Pertussis and Brucella Bronchiseptica. I. E. Bruckner and D. G. Evans.—p. 563.

Pathogenicity of Bacterium Alkalescens.—From the literature Nabarro and Edward collected evidence which makes them believe that Bacterium alkalescens is pathogenic for man. Seventeen cases are recorded in which Bacterium alkalescens has been isolated from the feces. In these it was associated with disease, nearly always involving the intestinal tract. The series includes one example of case to case infection in a ward, thus demonstrating the infectivity of the organism. They conclude that Bacterium alkalescens can produce a mild form of acute dysentery or a chronic colitis. The infection is thus primarily intestinal and lesions produced elsewhere are to be regarded as complications such as are known to follow Flexner dysentery. Specific agglutinins of significant titer were produced in many cases. Bacterium alkalescens shares certain antigens with other dysentery organisms. The authors suggest that symptomless carriers of the organism occur relatively more often than after Flexner dysentery. This may explain why complications due to a secondary invasion of the urinary tract or blood stream, for example, are relatively more common.

Lancet, London

2: 1107-1156 (Nov. 25) 1939

- Treatment of Burns and Scalds in Children. W. M. Dennison.—p. 1107.
*Hereditary Familial Purpura Simplex. E. Davis.—p. 1110.
Vinesthene Anesthesia in General Practice. J. Elam.—p. 1115.
Congenital Duodenal Diverticulum. W. E. Tanner and T. H. C. Benians.—p. 1117.
Renal Calculi Following Alkali Therapy. T. Moore.—p. 1118.

Hereditary Familial Purpura Simplex.—Davis observed eleven families, which included several members, mostly females, who showed spontaneous ecchymoses. In eight families purpura occurred in successive generations, and in three families in sisters of the same generation only. Of the families described the author examined twenty-five purpuric members. The capillary resistance test was positive in sixteen and negative in nine. The test was also positive in four nonpurpuric members of these families. Platelet counts, bleeding time, coagulation time, blood fibrinogen and clot retraction were normal where tested. Other tendencies to abnormal bleeding or bruising were not often present and were rarely severe; but one female subject with purpura simplex died of a chronic nephritis associated with widespread hemorrhages. One family also showed hereditary telangiectasis. Ecchymoses first appeared in five families about the time of the climacteric, and they came on at earlier ages in the next generation in seven families. The ecchymoses were frequently associated with rheumatoid arthritis and rheumatic fever. Thus purpuric members gave a history of rheumatic fever in four families and of rheumatoid arthritis in five other families. Nonpurpuric relations had had rheumatic fever in

five families and rheumatoid arthritis in one family. The author believes that there is a relation between purpura, rheumatic fever and rheumatoid arthritis. Familial purpura is clearly not the hereditary hemorrhagic thrombasthenia of Glanzmann (1918), subsequently called hereditary pseudohemophilia (Schlicke and Hall 1938), because typical features, such as severe bruising from slight trauma, recurrent visceral hemorrhages and prolonged bleeding time, were absent. There was a history of epistaxis in three families, menorrhagia in three, and both epistaxis and menorrhagia in one family, but these bleedings were not often severe. The author regards the condition he described as a familial hereditary purpura simplex seen mostly in female subjects. He saw it in eleven families in twelve months; but medical advice was not sought and patients were not always aware that other relations were affected. The disorder seems the most benign form of hereditary hemorrhagic diathesis. The association of hereditary telangiectasis with hereditary purpura in one family is striking. The author wonders whether the association is fortuitous or whether there is a link between them.

Medical Journal of Australia, Sydney

2: 747-780 (Nov. 18) 1939

Experimental Variation of Urea Content of Blood. E. B. Drevermann.—p. 747.

*Pink Disease Treated by Vitamin B₁. G. Forsyth.—p. 751.
Traumatic Backache. N. Little.—p. 755.

2: 781-818 (Nov. 25) 1939

Germes and Generals. F. K. Norris.—p. 781.

The Polycythemias. R. Jeremy.—p. 786.

Gastroscopy: Some Observations and Case Reports. J. E. Sherwood.—p. 791.

Vitamin B₁ for Pink Disease.—Since certain features of pink disease in children show a resemblance to beriberi and pellagra (notably polyneuritis, changes in temperament, digestive disturbances, cutaneous rashes, muscle hypotonia, edema and vascular disturbances in the extremities) Forsyth used vitamin B₁ in doses larger than those usually prescribed, for the treatment of four children with this disease. The results were encouraging. Improvement seemed to occur after the daily oral use of from 180 to 600 units of vitamin B₁. In three of them the therapeutic agent used also contained appreciable quantities of the other factors of the vitamin B complex. The disorder of the other patient treated only with vitamin B₁ was of the nature of a mild recurrence with predominating polyneuritic element; on general principles one would expect this to respond to vitamin B₁. It is possible that pink disease is really a deficiency disease and that the substance or substances lacking may be part or the whole of the vitamin B complex. The cases presented seem to support this contention. On the other hand, it may be due to a virus infection with the brunt of the infection falling on the peripheral nervous system. Lack of vitamin B may be one of the factors which render the peripheral nervous system more prone to attack by the virus. In any case, treatment by vitamin B₁ could be expected to reduce the symptoms by virtue of its action in reducing polyneuritis. The author does not think that his cases prove or disprove the deficiency or the virus theory of the causation of the disease; for this reason he thinks that the various factors of the vitamin B complex, including nicotinic acid, are deserving of further clinical trial in pink disease.

South African Medical Journal, Cape Town

13: 693-712 (Oct. 14) 1939

National Health Insurance: I. Survey of National Health Insurance Schemes. A. M. Moll.—p. 695.

Id.: II. Point of View of the General Practitioner. C. P. Bligh-Watt.—p. 698.

Id.: III. Administrative Point of View. L. J. Hatch.—p. 702.

13: 713-734 (Oct. 28) 1939

Whither Anesthesia? R. M. Muir.—p. 715.

Porphyria and Polyneuritis: Case. F. H. Kooy.—p. 720.

Fitness and Disability. D. C. Watt.—p. 722.

Tubercle, London

21: 1-40 (Oct.) 1939

Diagnosis of Pulmonary Tuberculosis Without Bacteriologic Confirmation: Clinical Aspects. J. G. Scadding.—p. 1.

Id.: Administrative Difficulties. I. Davies.—p. 13.

Researches on Types of Tuberculosis Bacilli in Skin Tuberculosis and Especially in Lupus Vulgaris. J. Kamienski.—p. 17.

Journal Belge de Neurol. et de Psychiat., Brussels

39: 647-714 (Oct.) 1939

Meningioma of the Olfactory Nerve. J. Helmsmoortel Jr. and H. J. Scherer.—p. 647.

Rhythmic Myoclonias of Velum and Larynx. J. Radermecker and J. Helmsmoortel Jr.—p. 654.

Hereditary Cerebellar Ataxia of Pierre Marie. V. Gallemaerts, F. Kleyntjens and W. Cloetens.—p. 667.

*Effect of Deinsulinized Pancreatic Extract on Epilepsy. C. Rouvroy.—p. 676.

Paranoia and Homosexuality. J. de Busscher.—p. 691.

Effect of Deinsulinized Pancreatic Extract on Epilepsy.—Rouvroy investigated the effect of deinsulinized pancreatic extract on the various manifestations of essential epilepsy and in particular on minor epilepsy following convulsive attacks. The author investigated five such cases. They demonstrate the favorable effect of deinsulinized pancreatic extract: (1) reduction of the duration of minor epilepsy, (2) alleviation of secondary phenomena such as excitation, agitation, hallucination and refusal of food, and (3) hypersomnia, distinctly longer than that following attacks of major epilepsy or the status, with retention of the motory reactions to exterior stimuli. The author points out that deinsulinized pancreatic extract, referred to as angioxyl, worked in cases in which other powerful therapeutic agents such as phenobarbital failed. Deinsulinized pancreatic extract was also used in a limited number of cases of major epilepsy. In isolated attacks angioxyl was found to have a retarding effect, but the attacks that followed became aggravated. The author succeeded in shortening the duration of intermittent attacks in two instances.

Journal de Radiologie et d'Électrologie, Paris

23: 385-432 (Sept.) 1939. Partial Index

*Treatment of Whooping Cough by Ultraviolet Rays: Results and Mode of Action. P. Delthil and G. Peuteuil.—p. 385.

Indications for Roentgen Therapy of Inflammatory Gynecologic Disorders. R. Mathey-Cornat.—p. 390.

Infantile Vertebral Osteochondritis (Vertebra Plata of Calvé). P. Passabois and P. Bétoullères.—p. 397.

Anti-Inflammatory Roentgen Therapy. J. Huguet and G. Daniel.—p. 401.

Roentgen Rays in Inflammatory Disorders. B. Mayer.—p. 403.

Examination of Mucosa of Large Intestine. R. Ledoux-Lebard and J. Garcia-Calderon.—p. 413.

Ultraviolet Rays in Whooping Cough.—Delthil and Peuteuil point out that the multiplicity of methods which have been recommended for the treatment of whooping cough indicates that none of them insure constant successes. On the other hand, it has been recognized that the patient's general condition is of great importance for the prognosis of whooping cough. Consequently, attempts have been made to increase the defenses of the organism. Some investigators, among them Bru and d'Agen, have recommended the use of ultraviolet rays in cases of whooping cough. However, in spite of the good results obtained by them and by others, this therapeutic method apparently has received little attention. The authors describe their own experiences with this method and their investigations on its mode of action. They found that the attacks of coughing diminished rapidly in number and intensity after the second or third irradiation. The attacks of vomiting, which appear to the families as the most distressing of the symptoms, are influenced even more effectively by the ultraviolet rays. Sometimes the vomiting is arrested before the cough has improved. The disappearance of the attacks of vomiting permits better nutrition, and the diminution of the cough favors sleep. Thus the emaciation is arrested. This is especially important in nurslings, for it is well known that the young organism has only slight resistance to accentuated or prolonged denutrition. The authors further stress that, by reducing the cough and by acting on the general condition, the ultraviolet rays reduce the complications. It being extremely difficult to estimate the end of whooping cough, some investigators, who recognize the favorable effect of ultraviolet rays on the cough and the vomiting, do not admit that the evolution of the disease is modified by these rays. Nevertheless the authors cite cases in which the course of the whooping cough could be considered as shortened by the action of the ultraviolet rays. The rays exert their action by different mechanisms. The modifications of the blood are constant; not only are the formed elements changed but the phosphorus and calcium contents are noticeably increased. The nervous system is favorably influenced and a regulating influence is exerted on

the respiratory and cardiac rhythms. The endocrine and visceral organs react to the rays by way of the peripheral terminations of the sympathetic. Finally the actinotherapy constitutes a veritable shock therapy, which is revealed by fever, agitation with insomnia, temporary leukopenia and hypotension. The erythema and the actinic pigmentation indicate hormonal modifications; there is no erythema without signs of biologic shock. These phenomena have been explained by sudden changes in the serum albumins. The authors assume that the calming effect on the nervous system, the regulating effect on the neurosympathetic tonus or the reestablishment of normal calcemia and phosphatemia have an essential part. They do not recommend the actinotherapy for the onset of the disease but think that the irradiations should be begun between the tenth and fifteenth days. The ray should be applied in such a manner that erythema and pigmentation are produced as quickly as possible. The distance from the source of light is at first 90 cm., and at the second or third session it may be reduced to 75 cm. To test the cutaneous sensitivity of the patient, the authors begin by applying the rays one minute to each side of the body. If no erythema results, the time is extended to three and then to six minutes. If a mild erythema is produced, augmentation is done gradually to avoid a too violent reaction; for instance, the irradiation is extended to seven or eight minutes. After shock, erythema and fever have been produced, the subsequent exposures can be of equal length. The number of irradiations varies between four and twelve.

Fortschritte a. d. Gebiete der Röntgenstrahlen, Leipzig

60: 253-322 (Oct.) 1939. Partial Index

- Symptoms of Fatigue (Necrosis and Pseudarthrosis) of Carpal Scaphoid Bone Caused by Chronic Trauma (Pneumatic Tools). R. Andreesen. p. 253.
Metastases in Genital Carcinoma of Women, with Special Consideration of Bone Metastases. H. Dörr.—p. 263.
Avulsion Fracture of Mastoid Process. E. Wörner.—p. 273.
Extra-Articular Bone Changes in Primary Chronic Polyarthritis. K. Weiss.—p. 280.
Diagnosis of "White Bile." J. Berg.—p. 284.
*Nature of Circumscribed Areas of Rarefaction in Neck of Femur During Perthes' Disease. W. Müller and W. Loepp.—p. 294.

Rarefaction in Neck of Femur During Perthes' Disease.

—Müller and Loepp direct attention to the fact that in typical cases of Perthes' disease (osteochondritis deformans juvenilis) peculiar spotlike rarefactions are occasionally observed in the neck of the femur. Their studies on the involvement of the neck of the femur in Perthes' disease were made at the orthopedic clinic of the University of Königsberg. Disregarding uncharacteristic changes in the form of simple atrophy, spotted atrophy and indistinct structure, they observed typical rarefaction on the neck of the femur only in those patients in whom Perthes' disease appeared at a relatively early age, at any rate before the fifth year of age. The fact that Perthes' disease may develop in relatively young children, that is, in the third or fourth year of life, has recently been pointed out by Gickler, and the authors were able to corroborate this early appearance in their own material, in that they observed four cases in which the typical picture of Perthes' disease existed already during the fourth year of life. They observed that the changes on the neck of the femur develop only during a certain stage of the epiphyseal disturbance and it is especially this temporary course which is important for the estimation. They describe two typical cases and illustrate the reports with roentgenograms. In summarizing their observations on the areas of rarefaction they say that in cases of Perthes' disease, particularly in those of a relatively early age and also in analogous diseases for instance of the heel, there develop in the immediate vicinity of the cartilaginous symphysis, and at first connected with it, circumscribed rarefactions in the atrophic bone tissue of the neck of the femur, which correspond to the cartilaginous invasions of the vertical column known as Schmorl's cartilaginous nodules. They believe that, like Schmorl's vertebral cartilaginous nodules, the areas of rarefaction in the neck of the femur represent invasions of cartilaginous substance into the atrophic spongiosa, which, like the former, later have a densified osseous wall in their edges. As a result of the more intense growth of the neck of the femur, the cartilaginous invasions gradually move deeper into the neck of the femur and lose their connection with the cartilaginous symphysis. Later they disappear completely; apparently they

are replaced by osseous tissue. Thus the cartilaginous invasions are only temporary changes, and in view of this fact they cannot be regarded as the cause of Perthes' disease or of analogous changes in other bones but rather must be considered as a secondary process. The knowledge that the rarefactions are analogous to Schmorl's nodules is important, because it will prevent their being mistaken for inflammatory processes.

Klinische Wochenschrift, Berlin

18: 1357-1380 (Oct. 21) 1939. Partial Index

- Pharmacologic Modification of Sympathetic Centers. H. T. A. Haas.—p. 1357.
Relations Between Vitamin B₂ (Riboflavin) and Thyroid. H. Wahl.—p. 1363.
*Significance of Iron Content of Serum for Estimation of Leukemia. R. Stodtmeister and P. Büchmann.—p. 1365.
Myasthenia Gravis, Especially Its Relation to Thyroid. K. Tsuji.—p. 1366.
Simple Method for Quantitative Determination of Cocarboxylase in Blood and Tissues According to Thiochrom Method. K. Ritsert.—p. 1370.

Iron Content of Serum in Leukemia.—According to Stodtmeister and Büchmann an extremely high leukocyte count in leukemia does not necessarily indicate an unfavorable general condition, although the therapeutic procedure is often based on the leukocyte count. The authors ascribe greater importance to the general condition and particularly to the behavior of the temperature. Patients with leukemia who require treatment often have subfebrile temperatures which impair the general condition and which disappear in the course of treatment. The presence of a large splenic tumor likewise indicates the necessity of energetic treatment. The differential blood count is of greater importance than is the absolute number of leukocytes. A predominance of young and immature elements makes the prognosis unfavorable. In view of the great importance which iron has for the general cellular metabolism, the authors studied the iron content of the serum in four cases of chronic myeloid leukemia and in one case of lymphatic leukemia. They found that the iron content of the serum is a reliable indicator of the general condition. In view of the considerable fluctuations that occur in the iron content, a single determination is insufficient. The authors controlled their leukemic patients for several weeks. They found that, with progressive deterioration of the general condition, the iron content of the serum decreases. However, the level of the iron content does not go parallel with the hemoglobin content and the leukocyte count. If in the course of roentgen therapy there is an improvement in the general condition, the iron content increases noticeably. If the iron values remain low there is usually no improvement. A deficiency of iron also finally affects the erythropoiesis and the result is a secondary anemia. Thus the anemias which develop in the course of chronic leukemia are due to iron deficiency.

Monatsschrift für Kinderheilkunde, Berlin

80: 1-136 (Sept. 20) 1939

- Pathogenesis of Exudative Eczematoids. H. Hüllstrung.—p. 1.
Treatment and Curative Possibilities of Sepsis During Childhood. A. Fykov.—p. 42.
Simmonds' Disease During Childhood. J. Geldrich.—p. 103.
Use of Aminophylline in Treatment of Diphtheric Myocarditis. F. Biskupski.—p. 121.
Esophageal Atresia and Esophagotracheal Fistula. J. C. Schippers.—p. 131.
*Is There a Connection Between Fat Content of Breast Milk and Length of Intervals Between Nursing? U. S. Ružičić and Z. Popović.—p. 135.

Fat Content of Breast Milk and Intervals Between Nursing.—Ružičić and Popović say that in previous experimental studies they found that the food intake of a lactating woman greatly influences the fat content of her milk. Other investigators, however, have cited other factors as influencing the fat content of breast milk. The authors were especially interested in Marfan's assertion that the fat content of breast milk is dependent on the intervals elapsing between the breast feedings. In order to verify this contention the authors made investigations on ten wetnurses. During the first two days of observation the milk was expressed from the breasts at hourly intervals; during the following two days the intervals were extended to two hours and then for two days each to three, four, five and six hours. A table which records the fat content of the

different specimens of milk reveals that there are individual differences, which the authors think were to be expected in view of individual differences in diet. The fat content of the milk specimens has no connection with the length of the intervals between nursings. However, the tables seem to indicate that a connection exists between the nursing intervals and the daily quantity of milk but the total daily quantity of fat is not influenced by it. The authors are now conducting investigations on this problem. In the summary they stress once more that the length of intervals between nursings is without influence on the fat content of milk.

Wiener klinische Wochenschrift, Vienna

52: 929-948 (Oct. 13) 1939

Significance and Interdependence of Metabolic and Digestive Disturbances in Patients with Circulatory Disorders. O. von Zimmermann.—p. 929.
*Modification of Hyperthyroidism by Magnesium Glutamate. E. F. Hueber.—p. 932.
Epinephrine Therapy of Bronchial Asthma. O. Raupenstrauch.—p. 933.
Treatment of Cystitis. W. Brandesky.—p. 934.

Magnesium Glutamate in Hyperthyroidism.—Hueber says that earlier he and Lehr demonstrated that magnesium compounds have a regulating action on the heart in experimentally produced cardiac arrhythmias. At that time they suggested as a possible explanation of this action of magnesium that some investigators had succeeded in reducing the cellular respiration in the frog heart by means of magnesium, that others had observed that magnesium reduces the metabolism in rabbits, and so on. These observations induced the author to investigate the action of magnesium in conditions of pathologically increased metabolism such as hyperthyroidism. He gave injections of magnesium glutamate to six patients with hyperthyroidism. The basal metabolism was measured with a standard apparatus on the day the patients were admitted to the hospital and again after from five to seven days of rest in bed and injections of an indifferent substance such as distilled water. At the end of this period of rest, only those who still had a greatly increased basal metabolism were subjected to three daily injections of 10 cc. of a 10 to 20 per cent solution of magnesium glutamate. The intramuscular injections were tolerated without irritation; the intravenous injections produced a disagreeable feeling of heat similar to that which is observed in injections of calcium; however, when made slowly the intravenous injection was tolerated without harmful effects. After three days of medication with magnesium glutamate the basal metabolism was determined again and it was found that increases of from 25 to 60 per cent had been reduced, so that now the values were only from 7 to 13 per cent above normal. Moreover, the patients felt relieved and objective symptoms such as tachycardia were lessened. The reduction in the basal metabolism and the improvement persisted in most cases or a renewed increase could be suppressed by treatment with magnesium glutamate. The problem of how the magnesium glutamate acts on the increased metabolism is being investigated by means of animal experiments.

Zeitschrift für klinische Medizin, Berlin

136: 577-714 (Sept. 21) 1939. Partial Index

Blastomycosis and Central Nervous System. O. Stochdorph.—p. 577.
*Influence of Spleen on Carbohydrate Metabolism in Constitutional Hemolytic Anemias. A. Herzog.—p. 610.
Surface Tension of Serum and Its Constituents in Higher Dilutions. C. J. Keller and O. Känzel.—p. 631.
Deformation of Electrocardiogram by Action Current of Abnormal Transmission Fibers in Bipolar and Unipolar Derivation. H.-W. Wünsche.—p. 639.
Resorption of Calcium Following Intracutaneous Administration Under Various Experimental Conditions. G. Hetényi and F. Herman.—p. 650.
Blood Sugar and Blood Ketone Bodies of Diabetic Patients During Fasting and Their Evaluation in Total Metabolism. C. Dienst.—p. 659.
Blood Sugar and Gastric Function in Their Reciprocal Relations. W. Thiele.—p. 664.

Spleen and Carbohydrate Metabolism.—Herzog says that the realization that galactose is assimilated almost exclusively in the liver led to the use of this monosaccharid in tests of the hepatic function. However, the reliability of this test has been challenged repeatedly and it has been pointed out that various endocrine glands, such as the thyroid and the pancreas, exert an influence on the assimilation of galactose. The author reviews the literature on the connection between the pancreatic function and the assimilation of galactose. He reports two

cases which suggest that insulin promotes the tolerance for galactose. The cases are of interest from the point of view not only of the carbohydrate metabolism but also of the blood-forming tissues. Studies on the blood and on the carbohydrate metabolism are described in detail. The patients had hemolytic anemia. One of the cases was noteworthy for therapeutic sensitivity toward iron and in both cases the hemolytic anemia was accompanied by leukopenia. Both of the patients showed hyperassimilation of galactose. In the oral administration, from 60 to 70 Gm. of galactose was tolerated and the intravenous administration of 40 Gm. of galactose resulted in only slight elimination; furthermore, in the course of a dextrose tolerance test low hypoglycemic values in the after-fluctuation of the blood sugar curve indicated increased activity of the insular apparatus. The author discusses the connections between assimilation of galactose and the action of the insular apparatus. He shows that in cases of spontaneous hypoglycemia there may occur agalactosuria as the manifestation of an increased insular action. He further shows that an influence of the spleen on the carbohydrate metabolism may have a part in the hyperassimilation of galactose. Observations on the reported cases, particularly on one of them, make it appear possible that hyperfunctioning of the spleen may be the cause of a negative galactose test in the presence of a parenchymal disorder of the liver. Moreover, the author suggests that some of the "failures" of the galactose test in parenchymatous hepatic diseases which have been reported in the literature may likewise have been the result of splenic hyperfunction.

Zeitschrift für Tuberkulose, Leipzig

83: 1-64 (Sept.) 1939

Is Positive Tuberculin Reaction a Sign of Immunity Against Tuberculosis? O. Jung.—p. 1.
*Influence of Weather on Patients with Tuberculosis. A. Schuberth and R. Gruner.—p. 12.
Influence of Bioclimate and Weather on Reticulocyte Content of Blood in Patients with Pulmonary Tuberculosis. H. Grebe.—p. 23.
Percentage of Positive Results Obtainable by Fluorescence Microscopy in Specimens from Tuberculous Patients. H. Gärtner.—p. 27.
Apparatus for Warming Laryngoscope. E. Dorn.—p. 31.

Influence of Weather on Tuberculosis.—Schuberth and Gruner show that persons with a hypersensitive sympathetic nervous system are especially suitable for the study of the effects of weather, because they are sensitive to changes in weather. Referring to studies by Hellpach, the authors differentiate between persons with weather "feeling" and persons who are sensitive to the weather. The latter are designated as A types and the former as B types. In the persons who are sensitive to meteorological changes (A types) the irritability involves local processes such as scars of all types, amputation stumps, inflamed bursae and diseased joints. The persons with weather "feeling" (B types), however, are characterized by a lability of the entire sympathetic nervous symptom. The weather symptoms of these persons with weather feeling can be differentiated into central and peripheral symptoms. To the central symptoms belong lassitude, exhaustion, irritability, depression, anxiety and insomnia; to the peripheral symptoms, disturbances in the organs with sympathetic innervation (polyuria, nausea, diarrhea or constipation, palpitation of the heart, spasms of various types and increased capillary permeability). Tuberculosis is usually accompanied by hypersensitivity of the sympathetic nervous system and for this reason tuberculous patients are especially susceptible to meteorological changes. Tuberculous patients with weather "feeling" are usually also sensitive to the weather, for they all have scars (pulmonary, pleural and often surgical scars). Moreover, the sensory stimulation threshold is changed as the result of the effect of the tuberculous toxin and this frequently results in true neurasthenia. The B types among the tuberculous patients usually feel meteorological changes sooner (premonitory sensations) and more intensively than do the A types. The disturbances and signs of sympathetic irritation may differ greatly. That certain types of weather elicit always only certain symptoms could not be corroborated; however, there is a predominance of some symptoms and disturbances in the course of certain atmospheric processes. The effect of a weather front is the greater, the longer is the time that has elapsed since the passage of the previous front and the greater is the difference between the invading air masses and those that occupied the same region before. The harmful effects of such fronts on the

tuberculous patients should be weakened by special care and the administration of medicaments before the passage of the front. This of course requires collaboration between the physician and the meteorological observatories.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 5129-5236 (Oct. 28) 1939. Partial Index

Unguis Incarnatus. M. N. Roegholt.—p. 5130.

*Iontophoresis in Treatment of Keloids, Dupuytren's Contracture and Scleroderma. M. Nijkerk.—p. 5135.

Poliomyelitis on the Basis of Observations in General Practice. N. A. Bolt.—p. 5141.

Dialectrolysis in Its Application in General Practice. L. Coenen.—p. 5152.

Iontophoresis in Keloids, Dupuytren's Contracture and Scleroderma.—Nijkerk employed iontophoresis in four cases of keloid, two of Dupuytren's contracture and seven of scleroderma. The negative electrode was saturated with a 1 per cent solution of potassium iodide and was placed on the diseased area. The negative electrode exerts a sclerolytic effect. In the patients with keloids the current strength was usually 2 milliamperes; each application lasted from ten to forty-five minutes and the total number of applications varied between 104 and 208. This number was given over periods of from one year to two years and nine months. In the cases of scleroderma the treatment was continued for from five months to one year and eight months, the individual session lasting from five minutes to one hour; the current strength was from 1 to 4 milliamperes. In the cases of Dupuytren's contracture the current strength was 2 milliamperes; the individual treatment did not last longer than thirty minutes, and the total number was twenty-four and 117 respectively. Four of the thirteen patients, that is, one with keloid, one with Dupuytren's contracture and two with scleroderma, were cured; the others were improved. As the iontophoresis must be continued for a long time it should be applied only after the more simple treatments have failed. The electric current should not be raised too high because it may produce hyperemia, edema, necrosis and ulceration.

83: 5237-5332 (Nov. 4) 1939. Partial Index

Syphilis of Aorta. C. L. de Jongh.—p. 5243.

*Thoracoplasty with Intrathoracic Placement of Scapula. J. B. Kusters.—p. 5250.

Partial Upper Thoracoplasty in Pulmonary Tuberculosis. C. Oudenaarden.—p. 5259.

Determination of Vitamin C in Healthy Persons and in Patients with Chronic Polyarthrititis, Scurvy and Leukemia. G. A. K. von dem Borne.—p. 5265.

Thoracoplasty with Intrathoracic Placement of Scapula.—Kusters observed comparatively slight reactions after the resection of the three upper ribs but severe reactions following interventions on the lower ribs. He thinks that this is due to the fact that the upper ribs are only slightly involved in the respiratory movements and that the weakening of the upper wall which is produced by the removal of the upper ribs is largely corrected by the wide upper side of the scapula. He found that in suitable cases the scapula could be luxated inward over the edge of the ribs and after having been placed inside the thoracic wall, into a space prepared for it, it acted as a filling and produced a collapse of an extent which otherwise would have required the resection of three more ribs. Before reviewing three cases in which he employed the intrathoracic placement of the scapula, he points out that several days after he had employed this procedure for the third time Maurer, of Davos, described a similar procedure with intrathoracic placement of the scapula. The three histories reported here indicate that from three to five ribs were removed. The author emphasizes that with this method surgical shock and deformity are less than with the more extensive thoracoplasties.

Nordisk Medicin, Helsingfors

4: 3179-3236 (Oct. 28) 1939. Partial Index

Hospitalstidende

Roentgen Diagnosis of Meniscus Lesions in Knee. C. E. Prip Buus.—p. 3185.

*Riedel's Goiter. P. Brændstrup.—p. 3189.

Riedel's Goiter.—Brændstrup states that of the seven cases of Riedel's thyroiditis treated at the Finsen Institute since 1932 only one presented unusual features. The patient was a girl aged 18 in whom symptoms of a typical exophthalmic goiter

set in two years earlier. Her condition improved somewhat under treatment with iodine but she was unable to work. The thyroid gland showed diffuse enlargement and was as hard as iron; the general condition, metabolism and pulse pointed to myxedema, although the metabolism became normal on discontinuation of the iodine. Strumectomy was done, partly because of suspected malignity. Microscopic examination revealed the characteristic changes of Riedel's fibrous goiter. The question is, the author says, whether there was originally an exophthalmic goiter with later fibrous changes and development of clinical myxedematous features or whether it was from the start a Hashimoto's struma with transition into extensive Riedel's fibrosis, which would agree with the changing pathanatomic picture. He has found no case in the literature in which the disorder was characterized by true symptoms of exophthalmic goiter in the beginning, although signs of milder hyperthyroidism are seen. Postoperatively there has been a slight aggravation of the myxedema and the patient must be kept under observation.

Finska Läkaresällskapets Handlingar

Treatment of Pyarthrosis of Knee According to Willem. L. J. Lindström.—p. 3193.

Lengthening of Electrocardiographic Ventricular Systole (Distance QT). H. Törnroth.—p. 3197.

*Ruptures of Aorta. R. Gordin.—p. 3201.

Case of Avitaminosis B. Ruth Wegelius.—p. 3208.

Treatment of Gastrointestinal Infections with Ammonium Mandelate. G. Sternberg.—p. 3210.

*Acute Disseminated Encephalomyelitis and Its Eventual Connection with Postinfectious and Postvaccinal Nervous Complications. F. Möller.—p. 3215.

"Bronchography with Air" in Cases with Changes in Larger Bronchi in Pulmonary Tuberculosis: Two Cases. H. Dahlstedt.—p. 3224.

Complete Arrhythmia and Its Treatment with Quinidine (Vaquez). O. Ohlin.—p. 3226.

Ruptures of Aorta.—In 654 necropsies from Maria Hospital in Helsingfors there were eight cases of rupture of the aorta (four arteriosclerotic, three syphilitic and one of idiopathic medionecrosis of the aorta) and in 1921 necropsies from the Pathologic-Anatomic Institute five cases (two arteriosclerotic, one syphilitic, two of unknown etiology). Gordin says that, although reports of 500 cases of rupture of the aorta have been published, only twelve of these were diagnosed during life. Recovery has occurred in a number of cases of rupture of the aorta, especially those which form a dissecting aneurysm, and the cases have been accidentally found at a later necropsy. Clinical diagnosis should be made in order to improve the patient's chance of recovery even though the prognosis is poor and the therapeutic possibilities are slight. Sufficiently long and complete rest are most important in treatment.

Acute Disseminated Encephalomyelitis.—Möller says that especially in 1938 numerous cases of nonpurulent inflammation of the central nervous system occurred in Ångermanland in Sweden, forty-eight of which were treated at the Military Hospital in Sollefteå and are of interest etiologically, clinically and epidemiologically. While about half of the cases treated were in connection with various infectious diseases (mumps, measles, smallpox, whooping cough and zoster) and vaccination against smallpox, the others seemed to appear spontaneously. About half of the cases presented types of meningo-encephalitis, encephalitis or encephalomyelitis; the remaining were classified as meningitis, poliomyelitis or neuritis. All but one of the pure meningitides originated in connection with infectious diseases and vaccination. Both poliomyelitis and parotitis were widespread in the region. An increase in the number of cases of poliomyelitis occurred during February and March, which is remarkable considering the season and compared with the figures from Sweden generally. There were cases of encephalitic and of poliomyelitic type in the same village at about the same time. The occurrence of nervous complications connected with different infectious diseases and vaccination against smallpox with the simultaneous occurrence of acute inflammations in the central nervous system without evident relation to such infectious diseases supports the theory of the power of a generally spread neurotropic virus which prepares the way for a postinfectious or a postvaccinal encephalitis.

THE STUDENT SECTION

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Trends, Good and Bad, in Medical Education

THE ARTHUR DEAN BEVAN LECTURE

DAVID CHEEVER, M.D.

BOSTON

To be invited to give the Bevan Lecture before the Chicago Surgical Society is—for me at least—to feel two emotions: pleasure that the privilege should have been accorded me, and misgivings lest I have nothing to offer suitable for the occasion. It seems probable that my selection may be related to my interest in medical education, which may be inferred from the fact that I have been a teacher in the Harvard Medical School since 1903. Accordingly my subject is "Trends, Good and Bad, in Medical Education."

The life record—happily still far from complete—of the generous founder of this lectureship, Arthur Dean Bevan, suggests that the subject at least will be of interest to him. Dr. Bevan is a great physician-citizen of wide interests, embracing the practice of surgery, clinical investigation and teaching, but it is in the latter field or, more broadly, in the promotion of medical education that he is preeminent. He has taught the allied subjects of anatomy and surgery at Rush since 1888, and as chairman of the Council on Medical Education and Hospitals of the American Medical Association from its creation in 1904 until 1928 he was a potent influence in the reform of medical education accomplished by the Association, the Carnegie Foundation for the Advancement of Teaching, the Association of American Medical Colleges and the various state boards of licensure, working together: a reform which resulted in the closing of one half of the medical schools of the United States, the strengthening of others, the encouragement of university affiliations and the cutting in half of the medical student enrolment. No man in our profession has more consistently and ably battled for its elevation through raising the standards, professional and personal, of its members.

It seems an act of supererogation as extreme as the classic example of such things, the bringing of coals to Newcastle, to bring to Chicago a discussion of medical education—Chicago, the

home of four schools of high rank, of numerous hospitals, of national bodies representing organized medicine and many of its specialties, and especially of a medical fraternity whose leaders rank with the best in the world, old or new. To bring to Chicago a discussion of this subject may well seem superfluous. Yet precisely for these reasons a sympathetic and intelligent hearing is assured.

EPOCHS IN MEDICAL EDUCATION

This is not the place, and it would be unnecessary to rehearse however briefly the story of medical education in the United States, but I may remind you of its three characteristic epochs: first, the period of apprenticeship, when young men attached themselves to busy practitioners, followed and assisted in their daily work, studied in their libraries and started to practice either without a degree or with authority conferred perhaps by the local medical society or possibly by a college; second, the period of private or proprietary medical schools relying for their financial support largely or often solely on the fees received from students and therefore dependent on their good will, with all that that implies, and usually unable to meet the vastly increased expenses due to the new laboratory branches; third, the period in which we now happily live, when the marasmic schools have suffered a merciful extinction and there remain those which for the most part share the educational and financial support of universities or, if private, are sufficiently endowed to deserve and win high rating. Salutory and remarkable as the evolution has been, I feel that Mr. Abraham Flexner, in the masterly report of the Carnegie Institution for the Advancement of Teaching which was such a factor in securing the reforms of twenty-five years ago, did scant justice to many of the physicians and teachers of the earlier epochs. He had a thesis to prove and a moral to point and he justly excoriated the many mercenary proprietary schools which shamelessly hid for

students, misrepresented their laboratory and clinical advantages, and purveyed a miserably inadequate education on a mercenary basis. He might have described, without weakening his argument, the many high minded men who, attracted to medicine in the first instance by its opportunities for altruistic service and for scientific investigation, performed laborious and self-sacrificing work as teachers without the expectation of more than nominal monetary compensation, to the end that worthy successors might be trained to carry on the profession which they loved. These heroes of a previous epoch, so slightly referred to by some modern educators, did the best they could with what the times had to offer for their help. We physicians are by nature perfectionists. Billroth, writing in 1874 of the teaching of clinical subjects in the German universities, described its perfection and said "We torture ourselves in the endless stirring for constant improvement." Indeed is it not characteristic that, sixty-five years later, this audience of busy physicians should be listening to the same subject?

THE RAW MATERIAL

Let us consider first the raw material—the young men¹ who are to study medicine: Who shall they be and what shall be their preparation? Boys of sound character, good brains and good health, it goes without saying. Such boys are naturally attracted to a profession which offers remarkable opportunity for helpful service and for scientific investigation—characteristics which should be of chief influence in the choice. What of the material rewards as an attraction? The ambition to earn a good living, to support a family in comfort and to find happiness in the privileges which pertain to easy circumstances is a normal and praiseworthy one, but no greater mistake can a young man make than to pursue medicine as a career chiefly for the living which it may afford. He is pretty sure to rue his choice, for the long and arduous preparation and the exacting practice make the average modest income but a poor reward for such an ambition. The inability to command in some way sufficient resources to free the student from serious financial worries during the six to ten years of his purely professional preparation should deter any but the youth endowed with good health, unusual ability and high enthusiasm from entering on the career. The attempt actually to earn his living during the years in a first-rate medical school is only too likely to result in physical exhaustion, poor grades and disappointment. Such a statement is not intended to dissuade the unusual boy from making the essay; for him there are scholarships and loan funds and opportunities for earning in vacations, and per-

haps help from relatives or friends who are willing to risk a wager on his personality. Certainly in this country, where individual initiative and free enterprise have usually or at least until most recent times received their just rewards, the poor boy should not be estopped from any proper ambition; but unfortunately the appellation "poor boy" often connotes a miserable background of general culture, inadequate premedical study and handicaps of health and personality which give little promise for a useful career in medicine. I may be wrong, but I seem to perceive in our country in recent decades a tendency for some young men to seek the career solely for the sake of the money and the social respectability or prestige attaching to it. It seems peculiar, perhaps, to speak of the latter in this democratic country. In Europe, where for centuries society has been organized on a caste system (there are alleged exceptions now!) and where enlistment for the defense of the various fatherlands and for public service built up a spurious aristocracy, physicians have usually ranked rather low in the social scale. Perhaps the descent from the medical charlatans and barber-surgeons of the Middle Ages left its impression on the public mind. In America, however, in Colonial times the minister, doctor, lawyer and teacher formed the nucleus of the cultured and distinguished citizens of the community and neither wealth nor politics nor military service has supplanted them. There is no doubt that the level of the physician in the social order attracts some men for whom the opportunity for service and for scientific study have but little meaning. Billroth, in his "Lehren und Lernen," paints a ghastly picture of the inundation of medical school and hospital in Vienna by hordes of poor and ill prepared boys, seeking to secure the social hallmark of the physician, and says "In all my experience I found scarcely one genius among a thousand poor students." Vienna in 1870 and America in 1939 may perhaps scarcely be compared, yet there is just enough resemblance to give pause to the observer of the contemporary medical scene.

PREMEDICAL REQUIREMENTS

What shall be required as a preparation for studying medicine is a question for which there can scarcely be an authoritative answer; all that can be done is to sketch the minimal and optimal requirements and give an opinion as to their wisdom. A broad consideration of the problem is needed, looking especially to the question as to whether the same basic training should be required of all medical students without regard to the type of practice they are to pursue or whether it is to be varied in type and mitigated in severity of requirements by the supposed necessities of their future career. It is fairly certain, for instance, that the neurologic

1. And, of course, the young women.

surgeon will utilize in his practice quite different parts of his educational capital than the dermatologist. Some schools, as is well known, convinced of a special need in the community and perhaps influenced by their own particular educational equipment, advertise and try to furnish a course especially suited to general practitioners. Not referring to these schools, but pursuing the same idea of varying the course to meet conditions, it has been proposed that a shorter, less severe and less expensive training be provided for those who anticipate practicing under conditions which cannot justify in a material sense the huge capital investment of time and money. I am sure that you will agree with me that any relaxation of the minimal requirements believed to be necessary for the adequate primary education of a physician should not be considered with the object of meeting the average needs of the average community. These requirements at the present time consist of two years of college work, which include a full course each in inorganic and organic chemistry, physics and biology, a reading knowledge of French and German and, naturally, facility in the use of English. Any time remaining may be spent as the student desires. A few schools, of course, pitch their requirements higher. I have always felt that a few favored schools should require the full four years college course or at least urge it on their matriculants, as is in fact done.

PRESIDENT CONANT'S VIEWS

The premedical education still furnishes food for thought and discussion, as it has for a hundred years, in one particular aspect the essence of which is the proper proportion between the premedical sciences and the humanities, and the total content of both. President Conant, of Harvard, in a recent address before the Congress on Medical Education and Licensure discussed this subject and referred to the result of a questionnaire sent to medical educators and eminent practitioners which showed the widest divergence of opinion, ranging from the recommendation that a student spend most of his time in college with the humanities and social sciences with the exclusion of science, to the exact opposite. Mr. Conant believes that in many instances an excess of premedical science courses are taken by the student in order to impress favorably the committees on admission and fears that the latter may be susceptible to such an influence despite sincere protestations and resolutions to the contrary. He proposes an interesting plan by which prospective medical students shall be identified and tentatively approved at the end of their freshman year on the basis of their school and college record to that date and shall forthwith be guided as to their program by appropriate members of the college and medical faculties, due provision

being made for the desirable man who makes up his mind late. I confess that my own feeling about the premedical course has changed. Formerly I advocated the straight four year college course as a requirement and deprecated all but a minimum of the physical and natural sciences, on the ground that never again would the student, after his plunge into the most exacting of professions, be able to expose himself very satisfactorily to the general culture which contributes so much to happiness and distinction. But two factors made me change my mind: first, the extreme length of the preparation—from six to ten years after entering the school—which violates all economic and natural laws concerning the time when a young man may consider himself a full fledged unit in society; second, the tremendous increase in the part played by physics, chemistry and biology as a foundation for medicine. Regretfully I feel that two years of college work devoted almost wholly to premedical sciences must be accepted as the standard for most of our schools. If only our boys could enter college at 16 instead of 19, which is the average age at our great universities, I believe that part of the problem would be less acute. I know of no way in which this could be brought about except by gradual evolution and at the sacrifice of some alleged advantages afforded by college education at a later age. European boys, we are told, are two years ahead of ours in education. Whether this has any bearing or not, a survey of the contemporary scene in Europe and in America gives me pause in recommending a change. Regretfully also I feel that the physical sciences and to a less extent biology now play such an essential part in the foundation of the medical sciences that a more than elementary knowledge is important. Although the courses in the medical schools are supposed to be pitched at a level appropriate to the preparatory work, the necessities of the subject, the ambition of the teacher and the presence of some students who have pursued courses more advanced than their fellows result in the conduct of the courses at a level above that for which most of the class are prepared, but not higher, be it understood, than is advantageous for a man who aspires to have a firm grasp of the medical sciences.

A RARE FEAT FOR A MAN

My feeling is that the student in a two year premedical course must have the normal four courses in inorganic and organic chemistry, physics and biology, must acquire a reading knowledge of French and German, and should have at least an elementary knowledge of Latin and Greek, which are the tongues of those who cradled science and philosophy, on which is based medical terminology. Is there any time left for studies looking toward a wider culture?

The student who can afford a four year course may pursue one of two plans: If he has discovered a taste for pure science he should grasp every opportunity to lay a broad and deep foundation to support the research in medical sciences which will later be his main object; if his interests seem prophetic of a taste for the practical application of medical science to human problems, he may well devote himself to the broader cultural interests of the humanities and social sciences. It is, I believe, a rather rare feat for a man whose tardily awakened interest in what may be called laboratory science lays bare inadequate knowledge of the underlying subjects, especially chemistry and physics, to retrace his steps and build the missing foundation. On the other hand, the cultivation of general cultural tastes outside science may be a fruitful avocation for the physician with a scholarly and humanistic type of mind, throughout his life.

THE CURRICULUM

The curriculum of the medical school is far too technical and complicated a problem to be discussed here. There is general agreement, of course, in the wisdom of placing the preclinical laboratory branches in the first two years, of beginning the clinical work either in the second half of the second year or at the beginning of the third year, and of teaching the minor specialties toward the end of the course. Each school has worked out the details with due regard to its own peculiar conditions. At the Harvard Medical School the concentration system for gross anatomy, histology and embryology, physiology and biologic chemistry under which these subjects are studied intensively for four months each during the first year and then dropped from further formal consideration with the exception of elective courses during the fourth year and voluntary work during free time is thought to offer advantages. The obvious and chief disadvantage is that with the end of the course the student tends to relegate the subject to the category of finite and finished things, to forget it and to fail to keep it mentally available for his clinical experience. Two things may effectively counteract this: Clinical teachers should have the knowledge and breadth of view to permeate their teaching with the relevant application of these preclinical subjects, and all tests, especially the final general examination for the degree in medicine, should be designed to prove the student's knowledge in all branches, thus encouraging him constantly to review and refresh his previously acquired knowledge.

One innovation which we have introduced at the Harvard Medical School has been so apparently successful that I venture to speak of it in some detail. This concerns the introduction of

students during their preclinical work to the actual problems of patients in order to illustrate the importance and application of the laboratory work on which they are engaged. This has been done especially in gross anatomy, during the first four months of the first year. On Saturday mornings, which is "free time," the class is invited to the Peter Bent Brigham Hospital, where a senior member of the surgical staff shows any patients available in the hospital who exhibit lesions and problems relating to the anatomic structures which the students have been dissecting during the previous week. The nature and natural history of the lesion are explained in simple terms, together with the principles of treatment, all with especial reference to the importance and application of the anatomic structures and relations involved. A skeleton, blackboard drawings, wall charts and specimens are at hand for illustration. If an operation is indicated, it is now performed before the students. I hasten to say that I am not one of those who believe that operations performed before an amphitheater of students are ordinarily useful for instruction, but granted that the audience is of first year men, that the operation lends itself to somewhat long range observation and that the surgeon is an enthusiastic teacher who can demonstrate and discuss what he is doing without jeopardizing the asepsis or interfering with his work, it is remarkable how much can be seen, heard and understood by the student. Let me offer an example:

INSTRUCTION IN THE OPERATING ROOM

The students have finished the dissection of the pectoral region and are engaged in the axilla. A patient is shown on whom may be demonstrated the normal breast and its topographic relations; then another with the retracted nipple, orange peel skin, local tumor and perhaps axillary nodes of malignant disease of the mammary gland. The anatomic pathologic reasons for these changes are pointed out and perhaps three or four students from the front rows are allowed to palpate the tumor, after due warning by precept and example of the necessity for extreme gentleness (the danger of harmful trauma in this is not a fraction of that to which the patient has daily subjected herself in her ablutions and cosmetic manipulations. The theory of the spread of malignant disease by contiguous growth, permeation and lymph or blood stream invasion is explained, and the corresponding principles of removal by block dissections. Discussion is encouraged about what anatomic structures may be sacrificed in the name of thoroughness without too serious sacrifice of function. The patient is then operated on; it is shown how the skin incision can be planned to give adequate approach without impairing subsequent motion, the pectoral

muscles are demonstrated, the structures passing through the costocoracoid membrane including the anterior thoracic nerves, section of which the students are told to watch closely so that they may see the twitching of the muscles; the neurovascular bundle is isolated, retracted and perhaps some of its components quickly noted; the axilla is cleared, the lateral thoracic sensory nerves are divided and the posterior thoracic and thoracodorsal motor nerves are meticulously preserved. Practically all of these structures can, with a little trouble, be visually demonstrated to the majority of seventy-five or a hundred students in a suitable operating room. During intervals of the operation, or while anesthetist or assistants are busy, attention may be drawn to operating room manners and customs and to the ritual of asepsis, and reference may be made to Pasteur, Lister or Morton. At a subsequent exercise, usually on the next Saturday, the patient is shown again and relation made of the postoperative course, giving the student a new impression of the relative innocuousness of most carefully conducted operations. The result of such an exercise is that the student returns to the anatomic laboratory with a vivid idea of the significance and importance of what he is doing, which impels him to review the dissection already made and to push ahead with a degree of interest which is a great help in grasping anatomic facts and principles. The anticipation of some of the preliminary elementary teaching of later clinical years does no harm. Our experience has been that almost the entire first year class (with dwindling of numbers as examinations or other interests loom) attends these purely voluntary, time consuming exercises, for which no credit is given. The same principle is being tried less extensively in connection with neurology, physiology and embryology; obviously surgery offers the richest opportunity for correlation with anatomy. The course which I have outlined is never closed without the most emphatic and apparently sincere testimony from the students of the pleasure and profit which it has afforded them. Is not the judgment of the majority of mature students about their teaching important evidence of its value?

Another innovation has been the creation of "free time" for the students. In spite of the pressing demands by the crowding subjects of the curriculum, the afternoons of Tuesday and Thursday and the whole of Saturday have not been assigned and constitute free periods which each student may employ as he thinks best. Short voluntary courses are offered in special phases of major subjects or opportunity is provided to investigate some problem in which the student has discovered a particular interest; or the time may be spent in the library. No academic credit is given for these pursuits, and

the student need give no accounting of his time. It is believed that this lessening of the rigidity of the curriculum encourages the development of initiative and imagination and the capacity for self education, on which so much stress is justly laid.

SKILL IN TEACHING

Why not dismiss this division of our subject by the statement that a teacher of medicine should be a paragon of the mind and heart? There is no human virtue which would not adorn this most essential of the professions; but let us be realists and discuss one or two practical problems as to who shall teach our medical students, introducing the subject by saying that it has long been my conviction that far too little attention is paid and too little value attached to skill in the art of pedagogy. Too often the teacher of medicine is one not by conviction but because he controls clinical material. Too often he may be a medical scientist who suffers the boredom of teaching because his tenure of an academic post is conditioned on his discharging both functions. Be the clinical material ever so rich, be the research ever so significant, each will fail in realizing its full value for medical students unless it is communicated and interpreted by a good teacher. I am not speaking, of course, of the disciples who, singly or in groups, may attach themselves to a chief and absorb, as it were by osmosis, some of the essence of his work; I refer to the classes of average medical students who must be taught, or helped to learn to teach themselves, the science and art of medicine. In our more fortunate schools, part of the problem has been solved by their actual control of hospitals and clinics or of teaching services therein, usually under theegis of a university, so that clinical teachers may be sought anywhere and appointed to discharge both functions. But I am convinced that far too little importance is attached to skill in teaching. For years I have listened to the deliberations of appointing bodies and have been struck by the emphasis on almost every other qualification. I recall the discussion about the eligibility of an eminent laboratory scientist to head a preclinical department; his qualifications seemed beyond question until some one stated that he disliked teaching intensely. A distinguished member of the committee said "Why may this not be done? There are about forty lectures given in the course; there are eight instructors in the department; let each give five lectures and the problem is solved." The man in question, if my memory serves, was recommended for the appointment but wisely recognized his own true destiny. Words fail me in my condemnation of the unwisdom of such an attitude, which relegates the art of teaching to one of the least important of qualifying attributes.

QUALIFICATIONS OF TEACHERS

Without a genuine love of teaching, I believe, very few men can be good teachers. It is an inborn faculty, which no doubt can be cultivated, but not created, by practice. It defies description, formulation and analysis. I doubt that much about it can be taught, but I suspect that imitation whether conscious or not of a great teacher by the neophyte is often a great help. A teacher should have receptivity and critical sense which makes him alive to scientific progress and keen in evaluating its permanent and true value; he should have the enthusiasm and personal magnetism which inspire interest, and he should have the power of lucid interpretation and presentation; he is the radio through which the soundless waves of scientific thought are made audible to his students. If he is himself an original investigator, so much the better. A conviction which I hold very strongly is that the teachers of the preclinical as well as of the clinical branches should be graduates in medicine and that their eligibility is further increased by the fact that they have held internships in medicine or surgery or both, and still further by more experience as hospital residents or as practitioners. Such a statement would have seemed quite superfluous and alarmist twenty-five years ago, but my hearers must be aware how widely the professorial and many lesser posts are held by doctors of philosophy in anatomy, physiology, biochemistry and even pathology and bacteriology—men who have no M.D. degree and have no experience whatever with sick people. Some five years ago I ventured to speak of this in a paper before the American Surgical Association. Briefly, my theme was to call attention to, and express disapproval of, the degree to which gross anatomy was being disparaged and eclipsed by other studies, as indicated by the less time devoted to it, which is inevitable, but more especially by the fact that its teaching was passing into the hands of biologists with no medical training, who frankly considered that it was a dead and unprofitable subject and devoted their real energies to the prosecution of research in experimental and comparative morphology, embryology and cytology. The response from the Fellows of the Association and from anatomists and surgeons in America, Canada and England was remarkably unanimous and explicit in approval of my contention; of 150 letters received, only six expressed disagreement in essential particulars. This encouraged me to believe that my position was not that of a reactionary but expressed the views of those for whom medical education is organized—the physicians themselves, who after all should know better than any one else whether the tools which have been forged for them to work with are useful or not.

ANATOMY IS MOST IMPORTANT

I cannot conceive how anatomy can ever be regarded otherwise than as one of the most important of the basic studies, worthy of exposition by a teacher of the highest rank and emoluments. For years the only laboratory branch of instruction, it finds itself now in the company of a succession of more recently developed associates of equal importance and making equally deserving claims on the time schedule of the curriculum. Its relative importance is not one whit reduced. Without a knowledge of the form, structure and architecture of the human body there can be no science or practice of medicine. It should be in the hands of a teacher who has at least the knowledge of medicine and surgery conferred by a medical education and by a hospital internship and who therefore understands the clinical significance of his subject. I quite agree with those who recall without enthusiasm the long drill in the minutiae of descriptive anatomy of the British school of the nineteenth century, the relic of the epoch when anatomy stood supreme in its importance as a laboratory subject, but it is precisely the teacher with experience in clinical work who can differentiate between that which is important and useful and that which may wisely be passed over; who can make vivid and significant the otherwise proverbially dry study of anatomic structures undertaken before the student can have more than a vague idea of the application to his life work of what he is doing. I am not convinced of the wisdom of providing the student with a cadaver, a manual of dissection and a minimum of personal instruction and leaving him to work out his own anatomic salvation in the limited time available in the modern crowded curriculum. At the Harvard Medical School an elective course in the fourth year has long been given in applied anatomy consisting of demonstrations by a teacher of clinical surgery and dissection by the student directed especially to personal verification of the structures and relations which underlie the diagnosis and treatment of diseases medical, surgical or in any special fields except the eye and ear. This course, though exacting, attracted a large attendance. What was particularly interesting was that certain graduates of a medical school of the highest reputation where gross anatomy has suffered something of an eclipse asked permission to attend one or two of these exercises to refresh their knowledge of some special point and thereafter, as opportunity offered, attended most of the course, saying that in their undergraduate years the subject had never been presented in such a way that they could realize its significance.

SCARCITY OF TEACHERS

Opinions may differ as to the importance of anatomy in the scheme of medical education, but does it not seem a pity that it should not be so taught as to secure its greatest possible contribution to the education of the physician? It is said that it has become difficult or impossible to secure competent men to devote themselves to teaching gross anatomy, and no doubt the development of other laboratory disciplines offering more fertile possibilities for original investigation have attracted many teachers from the older field. But is it not fair to believe that disparagement of gross anatomy as a subject scarcely worthy of an able and ambitious teacher, with thinly veiled contempt for him who teaches it, that the statement that it deals with "nothing but fixed protoplasm," that it is "nothing more than a handmaid to medicine and surgery," that the anatomist is "only an anthropotomist," that "the days when the anatomist commanded the respect and confidence of his medical colleagues solely on the basis of his knowledge of static morphology are rapidly disappearing"—is it not fair to believe, I say, that such attitudes held by faculty colleagues are the surest means to keep competent men from the vocation? From unsolicited correspondence about this issue I could quote a score of statements like the following from the professor of anatomy in one of our most important schools: "I deplore the supplanting of medically trained teachers of anatomy by . . . zoologists who have no interest in or knowledge of medicine. The younger teachers of gross anatomy are ill paid and their acceptance of the position is looked down on by those in the experimental field"; and another: "Human anatomy loses its vitality when perfunctorily taught by one whose primary interest and experience is in a narrow field of abstract biochemical problems"; and again from a distinguished authority in public health: "I took it for granted that structure was the basis on which to build any medical edifice. . . . I have never regretted the time and labor spent in this discipline." A long time teacher in one of our oldest schools notes a *reductio ad absurdum*; "They advertise a course in applied anatomy given by a full-time laboratory man who has never had a patient."

THE REMEDY SUGGESTED

To complain of abuses and not suggest a remedy is captious and unconstructive. I am certain that among those well trained in clinical work through internships and resident posts, and perhaps by subsequent practice, may be found men who have found anatomy absorbing, who love teaching, who, if offered full professorial rank and salary and assured the respect of their fellows, would be proud to accept the chair of anatomy and discharge its

duties with the distinction and usefulness of the late Thomas Dwight. Such a man would himself be an inspiring teacher and would not delegate the major work and responsibilities to less competent men, in spite of which he would find time to pursue the interesting problems which still await study in gross anatomy or to work in embryology, comparative anatomy, physical anthropology or some allied subject. His chief delight, however, would always be helping his students to a knowledge essential to make them competent practicing physicians. Circumstances might alter the exact conditions surrounding his work in various ways. If funds for a full-time salary were not available it might be possible for the professor of anatomy to be also an attending surgeon in the university hospital with privileges of having private patients within its walls. For such a teacher, however, to be obliged to earn his living entirely in outside private practice would probably make it impossible for him adequately to discharge his duties. In any event, his rank should correspond to that of his colleagues in charge of equally important departments. On the same principle I feel sure that younger men with clinical experience and probably with surgical ambitions would be glad to devote adequate time for some years to supplementing their work and teaching in the laboratory, provided both their titles and their salaries reflected honorable esteem on the part of their colleagues in other departments. The proficiency in anatomy derived from constantly repeated dissection is one of the three portals leading toward competence as a surgeon: the others are apprenticeship and work in operative surgery on animals.

Gross anatomy has been emphasized in this discussion because it has become the most conspicuous example. It is understood of course that its sister subjects microscopic anatomy and embryology, usually classed together, constitute just as important a member of the premedical group. Because they are so much younger, because the improvement of investigative instruments and technic permit ever deepening delving into their unsolved secrets, because the problems of cell structure and growth are so intimately related to their physiochemical nature both in health and in disease, these subjects will always attract investigators. But I feel almost as strongly as in the case of gross anatomy that if these investigators are to be teachers of medical students their effectiveness and their own interest in teaching will be greatly increased if they themselves have a medical education and also, if possible, the brief but intensive clinical experience which goes with a hospital internship. The same principle applies to the other preclinical branches—physiology, biochemistry and pathology. If the teaching staff in the departments of physiology and

pathology have had clinical training and personal experience in diagnosing and caring for patients who manifest the disordered function and the tissue changes which constitute disease, their teaching may be made vivid and significant in a way otherwise scarcely possible. Let us take an example. In gross anatomy the student demonstrates the blood supply of a given part, not forgetting the anastomoses which permit collateral circulation; in histology he sees the smooth muscle and elastic elements and endothelial lining cells of arteries, veins and capillaries; in physiology he studies the dynamics of the circulation, including its control by vasomotor influences and the passage of fluids and of substances in solution and suspension through vessel walls into tissue spaces; in pathology he studies the inflammatory and degenerative changes of the vessels which impair normal function; in biochemistry he learns the chemical attributes of the blood and tissue fluids. Now suppose that each of these teachers points out briefly and simply the clinical significance of the subject and some of the phenomena which occur in the living patient, the result would be an intense interest on the part of the student and an understanding of the fundamental mechanisms of vascular diseases and of shock. Each subject would experience the vitalizing effect of the demonstration of its clinical importance. The premedical teacher will at once point out, and often justly, that the clinician on his part neglects to introduce the relevant facts of the basic sciences into his teaching. The allegation is too often correct. The clinician should permeate his teaching with these fundamentals, thus stimulating the students to study and review them.

THE TECHNIC OF TEACHING

The technic of teaching—the relative value of different methods—has always interested me. The metamorphosis of medicine from a study based on observation and classification to one based on scientific facts, which has taken place since the beginning of the last quarter of the nineteenth century, has been accompanied by the decline of dogmatic authoritarian teaching and the establishment and rapid rise of work in the laboratory, where the student must verify and investigate the already established scientific facts of the medical sciences and learn and practice the technical methods which he must know in order to apply them in his later work. Clearly the change implies that the student becomes self taught by doing things for himself, but this requires the personal supervision of instructors who must help the students either individually or in small groups. The same principle has been applied to work with patients, so that "section teaching" has become the accepted mode, and the lecture by a professor—meaning a senior teacher of wide experience—

is thought to have lost its usefulness. No doubt this is a great step in advance, but I should like to point out certain disadvantages. The great increase in the number of subjects in the curriculum due to the development of the medical specialties, and the employment of the principle of section teaching in most of these subjects, have increased to almost fantastic degree the number of teachers in proportion to the number of students. At the Harvard Medical School, for instance, there are normally 525 students and somewhere between 550 and 600 names on the list of teachers. I leave it to the mathematically inclined to figure the theoretical fraction of a student to each teacher. The point I wish to make is expressed by this question: Is it reasonable to suppose that even in the Athens of America there is a majority among these men with the rare attributes of a good teacher? As a whole they are a picked group, but they are human and are guided by such human motives as love of teaching, a sense of duty to society, a realization that teaching is the greatest incentive to their own self education, the obligation to teach attaching to their clinical post, the hope for prestige and, last and probably least both in fact and as a motive, the stipend. Some of these motives lead to good teaching, some do not.

A PROFESSOR DEFINED

As an antithesis to this picture stand the professor and the disparaged didactic lecture. As I intend to say a word in their favor, I must define the terms. By professor I mean a man of seniority, of ripe experience and of broad cultural background, who, whether or not he has participated in widening the field of medical knowledge by research, has assimilated discoveries and has tested them by experience; who has the faculty of interpreting and expounding ideas and who loves the doing of it. The adjective "didactic" simply means instructive, but it has acquired the connotation of a dogmatic discourse bearing the stamp of final authority and unilluminated by patient or specimens or by other objective examples. An example of it may be found in the reminiscences of President Eliot, where he describes the lectures in the Harvard Medical School in 1869 as read by the professor from sheets yellowed by age, as had been done for years. Or let Mr. Abraham Flexner speak: "Out and out didactic teaching is hopelessly antiquated; it belongs to an age of accepted dogma or supposedly complete information." There is no reason why the word "didactic" should be narrowed to such a meaning; for our present purpose let it mean a teaching exercise before the whole class, or a large part of it, conducted by the before described professor and illustrated or not, at his discretion, by patients, specimens, lantern

slides or technical procedures. "Oh, a clinical lecture," you say. Well, let it go at that; it is didactic and the point I wish to make is that it constitutes a most important and irreplaceable means of teaching. That shameless satirist George Bernard Shaw expresses the idea when he says (in quite a different connection) that it is better to have a sixth part of a first-rate man than the whole of a sixth-rate man. From recollections of my own experience and from the testimony of many physicians about what in their medical education they looked back on with pleasure and a feeling of profit, I am convinced that the type of lecture I have described has a very important place among methods of pedagogy. It is no doubt impossible clearly to describe the nature and source of what the student receives from such a personality; but any one who has sat under an Osler, a Fitz, a Billings, a Pepper, a Shattuck knows what I mean. Such a man interprets the facts of medical science, evaluates and reconciles conflicting views, helps perspective and a sense of proportion, paints the high lights and the shadows which contribute to interest and a sense of reality, and injects that indefinable something which derives from a distinguished personality. If his learning is built on a foundation of cultured and ethical ideology, these things, though farthest from his conscious thoughts, will not be concealed from his hearers. Better, I say, that for a part of the course 100 men are taught by such a man than that in sections of ten they should sit under men of lesser caliber.

THE PLACE OF RESEARCH

I have hinted broadly enough to be understood, I fancy, that I feel that skill in teaching is a high attribute which is not treasured, encouraged and rewarded as it should be in the contemporary medical scheme of education. Inevitably this brings up the subject of research and its place in the medical school. I could almost wish that the words "science" and "art" of medicine, "laboratory" and "clinic," "research" and "practice" could be banished from our current terminology or by some all-powerful ukase be relieved of the almost antithetical meaning which tends to be attached to them. There is a clear tendency for the faculty of a medical school to be divided into experimental laboratory researchers and men who practice the art of medicine clinically; and naturally the more richly supported or endowed the school, the more numerous and conspicuous are the former group. Somehow, I suppose because we are all human, there sometimes arises lack of a perfect mutual understanding or jealousies based on grievances related to the allocation of time in the curriculum or to budgets or to the reputation or status enjoyed in the academic world. The amazing advances

in medicine due to scientific investigation which have blessed us in the last seventy-five years—a period when, as has often been said, medicine made more progress than in the twenty odd centuries since Hippocrates—have justly glorified research, but would it not be unfortunate if this apotheosis of research should lead to the neglect of practice? Is it unreasonable to wish that the sickroom, the hospital ward, the ambulatory clinic should be considered to be laboratories where, in the words of the lexicographer, a "diligent, studious inquiry" is made by a researcher, using a hypothesis (a necessary step in scientific investigation) or in other words a diagnosis, which he proves if possible by scientific methods at his disposal and then proceeds to use the experimental method in applying curative or alleviating measures? For what is more true than that every therapeutic measure, be it operation, manipulation, medicinal administration or mental suggestion, is in the nature of an experiment on the human animal? An inquisitive and investigative spirit should pervade the medical school in every laboratory, lecture room and clinic. Every student should look on himself as an investigator engaged in research as he dissects the cadaver, as he cuts, stains and examines tissue sections, as he assists in physiologic demonstrations, as he observes and studies the organs displayed at the post-mortem table, and later in the clinical years as he helps to take clinical histories, to make physical examinations and to assist in the giving of treatment. Every teacher should realize that he is a director of research and saturate his teaching with the revelations of the experimental laboratory, with the principles derived from the fundamental preclinical sciences, with the illuminating light shed by historical allusion, to the end that the patient and his problems serve to focus and integrate all the disciplines and methods and events by which medicine has evolved.

MISGIVINGS IN MANY QUARTERS

Enough has been said to indicate that the spirit of investigative inquiry, together with the obligation to teach superlatively well, should be the dominating preoccupation of the medical school. So much for an idealistic statement; but from a practical standpoint what shall be the place and the conditions surrounding experimental laboratory research? Medical research is now carried on intensively in a few research institutes, in the experimental laboratories of the great commercial medical supply houses and in the many schools which can afford such an enterprise; indeed, so important has formal research become that sometimes it is not inappropriate to inquire, absurd as it may seem, what the primary object of a school may be! The most level headed of medical educators have not differed from the statement of C. W.

Eliot at the dedication of the buildings of the Harvard Medical School that "whatever else the regular education of the physician provides in the future, it must provide all the elements of the best training for the practicing physician"; or that of W. H. Welch, who after speaking of the evolution of the scientific laboratory said "The purpose of medical education, however, remains today what it has always been and will continue to be—the training of the student for the practice of his profession." But another view is at least suggested by the department head of one of our greatest schools when he says "A medical school must be judged *not only* by its research but by its students" (*italics mine*) and this emphasis on laboratory research is confirmed by the prestige attaching to it, which may secure the allocation of available funds from the school budget to a degree which works positive injustice to other activities and which often speciously invests the pure laboratory worker with the attributes and qualifications of a clinical teacher so that he is transferred to be the head of a clinical department. The originality and imaginative qualities of mind, the enthusiasm and power of concentration, the selflessness and other elements which usually characterize the really productive investigator are not often found combined in one man and rarely mean that he is an effective teacher or an able clinician. As a type is he superior or more worthy of admiration than his colleague in clinical teaching whom I have tried to delineate? Chance favoring his prepared mind, to paraphrase Pasteur, he may be the one among a thousand to make a discovery of lasting and incalculable benefit to mankind; if such he is, he should be protected and not urged to accept the leadership of a department where his time and strength are employed in probably uncongenial and possibly ill executed duties of teaching and administration.

The prevailing emphasis on research has occasioned misgivings in many quarters. So keen and wise a teacher and investigator as the late Francis W. Peabody wrote "One may reasonably question whether the large proportion of the budget devoted to research . . . and the great stress that has been laid on research ability in the selection of teachers is justified . . . when one considers that really significant research is unusual." As I have watched succeeding generations of students mature and the ambitious among them seek by every honorable means to establish their fitness for hospital and teaching posts, I have deplored the evident compulsion which they feel to win their spurs, to engage in experimental laboratory research, in order to "produce" something, an "arbeit" if we revert to the Germanophile period of medicine. And what is produced? Too often, I fear, an uninspired tenuous report which has worked over

some relatively unimportant problem and reached and verified facts already established or slight variants thereof, the whole communicated often in a series of fragmentary papers each with its imposing title. The work has been undertaken in an honest and laudably ambitious spirit, but the aptitude and inspiration are lacking, time and valuable materials, including experimental animals, are wasted, and a man whose talents should lead him to successful practice or teaching or administrative work experiences a disappointment which may harm his whole career, all because of the pernicious (as I believe it) doctrine in some academic circles that advancement should depend on research. Who of you who are faculty members have not sat on appointing or advisory boards considering the eligibility of candidates for a teaching post and heard the question "What has he produced?" while the pages of a typed dossier are turned bearing the titles of research work done, in press, in course, or projected. Would not the reply of Daniel Webster be appropriate, who, while seeking an appropriation for his native New Hampshire, was asked what the state produced. "Men," said Webster, "and God has graven their image in the granite of her hills." Men, then, are the product of a medical school, men to bring the benefits of scientific medicine to mankind and further to widen the confines of knowledge, each according to his talents.

PSEUDOSCIENTIFIC PUBLICATIONS

Signs are not wanting that the possible overemphasis of laboratory research is creating concern among thoughtful educators. At Harvard, comparatively recent accessions to resources were largely devoted to strengthening the clinical departments. Sir Thomas Lewis deplors the distinct cleavage between clinic and laboratory due to the prevailing association of research with the latter, and says, mincing no words, "The serious aspect of the widespread engagement in transient research is that, while such work rarely possesses scientific value, yet reporting of it has acquired a recognized commercial value and this latter becomes more often than not the real goal in view." A sympathetic chord will be struck in my listeners' souls by his reference to "attempts to stem the tide of pseudoscientific publications" and to "our library tables groaning under an ever increasing weight of periodicals." Often evidence from the laboratory is misleading in pointing to alleged expediency of changing methods which have proved thoroughly satisfactory in actual practice. For instance, recent well conducted experiments have apparently shown that, if the pressure in the biliary system of the dog is measured by a manometer tube inserted into the common duct, the administration of morphine increases that pressure, presumably by

causing a spasm of the sphincter of Oddi. Since the early restoration of the secretion of bile into the duodenum is desirable, the implication is clear that the use of morphine after operations on the biliary passages is contraindicated. Suppose that a surgeon of experience whose operative mortality and morbidity are favorable has found that the routine use of morphine has been uniformly apparently beneficial, with no evidence of contraindication; shall he give up its use? He will find that the younger generation who watch his work and read current literature will criticize him if he does not. I observe the almost routine use of blood transfusions and parenteral fluids as a result of the studies on water balance and serum protein ratios, the employment of transnasal gastric and duodenal siphonage and intestinal balloons. These measures are occasionally life saving, often beneficial but frequently unnecessary, since nature provides a wide margin of safety to adjust deviations from the normal, and a patient may suffer more discomfort and annoyance than benefit. A matter which, I believe, must be recognized and faced sometime is the question of the justification and ethical propriety of frankly experimental procedures on the human patient not designed directly as therapeutic measures. A candid reading of current literature and attendance at medical gatherings convince me that this situation exists. Undertaken with the zeal and pure motive of the laboratory researcher, and usually with the consent of the patient, they offer tempting possibilities for the determination of new facts which may become of importance in medical science and practice; but they may carry with them unfortunate possibilities of harm. The temptation to the devotee of scientific research is great. As Lewis says: "Progressive medicine to be fruitful must be experimental and original. It sometimes conflicts with full solicitude for the sick." Where shall the line be drawn? If such an evil exists, it is to the credit of our profession that its shadow is still scarcely perceptible.

THE SPECIALTIES

The teaching of the specialties and their place in the curriculum have been somewhat of a problem. We know how essential specialism is and how richly it has contributed to the advance of medicine, but we deplore the tendency for the specialist to lose a broad grasp of medicine as a whole and to look for the cause of ill health solely in his own narrow field. With the establishment and recognition of each specialty, it was the laudable aim of the medical school to furnish a fairly adequate amount of instruction in each. Some of us have come to the conclusion that this is both unwise and impossible: that undergraduate teaching should include only the basic things which enable a student to

integrate the specialties with medicine as a whole and later as a practitioner to recognize symptoms and signs which require him to seek expert assistance. The intensive study of a limited field should be postgraduate work and most of us are agreed that it should be preceded by adequate general clinical experience, such as that afforded by two or more years of general practice. Of the latter I am doubtful; perhaps it depends on the particular specialty. The ophthalmologist and the otologist, it would seem, would waste their time in preliminary general practice, when a good internship of two years' duration would furnish in concentrated form a more than equivalent experience. On the other hand, a man planning, for instance, to devote himself to neurology, gastro-enterology or cardiology would find a broad clinical experience highly advantageous. The various specialty examining and certifying boards are setting high qualifications for their diplomates, and though it is unlikely and perhaps undesirable in this country dedicated to democracy and free enterprise that legislation will ever confine special practice only to specially qualified physicians, the work of the boards is bound to be reflected in a higher level of medical practice.

FULL-TIME TEACHERS

Perhaps a word or two is not out of place about a problem formerly much discussed—that of full-time teachers in the clinical as well as in the laboratory branches. It would seem to be but common sense to believe that it would be wholly advantageous that adequate funds might be available to enable clinical teachers to devote their whole time to their work, without the necessity of engaging in private practice to support themselves. When this issue became acute on account of the proffer of funds for this purpose to certain medical schools, much controversial discussion was aroused and certain lay representatives of educational foundations expressed unfortunate disparagement of the work and character of many practicing physicians holding clinical professorial posts in medical schools, picturing them as selfish men doing perfunctory teaching—always neglected for the demands of private practice—in commercial schools conducted largely for the financial benefit of the faculty. Such a picture is so utterly at variance with the facts as I have known them that I cannot refrain from protesting. The clinical teachers (on "part time") whom I have known at close range—and I have no reason to think that they were peculiar in any way—were a devoted, conscientious, enthusiastic group, whose salaries were trivial and who performed their academic work at the expense of their practice. Being human, their motives no doubt were variously mixed; but I believe that those related to altruism and public

spirit far outweighed those essentially selfish. They were true disciples of Hippocrates. It would be absurd, of course, to deny that the principle of full-time clinical teachers has brought great benefit to the quality and quantity of medical instruction. The complexity and breadth of the curriculum tend to make greater demands on the teachers of professorial rank in spite of the more numerous personnel. That it is often impossible to secure the services of the ablest men on a full-time basis, because of their unwillingness to forego the pleasures and satisfactions of private practice, is of course inevitable and unfortunate, a drawback which increasing familiarity with the new dispensation and the diminishing return from practice which is a part of the handwriting on the medical-economic wall will probably correct. But I should be sorry to feel that the successful practitioner, whether specialist or not, had no honored place on the faculty of medicine. It seems only logical, as Osler pointed out, that since at least 90 per cent of medical students will enter practice they should be taught by men who understand the problems peculiar to practice as well as the science of medicine. Those who spend their lives in laboratory and hospital ward, with notable exceptions, do not acquire an indefinable quality or skill or attitude of mind and heart which characterize the well rounded physician—attributes which his assistants or students, as the case may be, are pretty sure to acquire from him from simply watching and listening to him as he works. Francis W. Peabody wrote: "In clinical teaching the active practitioner of internal medicine plays a very important role and he should receive positions and titles corresponding to the contribution he makes, . . . in my mind there is no question that the man whose practice is largely outside the hospital can bring something to students and staff that it is difficult for them to get otherwise." A like conviction was held by one of the greatest teachers, William S. Thayer, who said that "such an idea as to place clinical teaching in the hands wholly of university professors and to exclude the practitioners from hospital and school could hardly enter the mind of one experienced in medical teaching." The regius professor of physic at Cambridge, Dr. Ryle, says "Any system of medical education which treats him (the clinician) as a secondary figure stands self condemned." One of my own nightmares has been a vision of a patient in a university hospital interviewed, measured, weighed and pictured, every nook and cranny 'scoped, every fluid and secretion analyzed, affording a sheaf of reports duly recorded on a punch-card, which is fed into the maw of a computing machine whence issues the mechanically accurate diagnosis and treatment, which is handed to the patient by a robot.

MEDICINE IS DYNAMIC

The hypothetical student whom we have followed through preparatory school, college, medical school and hospital internship, and even through the specialty examining board examinations, is now ready to practice and, it would seem, might be no longer the recipient of officious advice from his would-be educators. But ahead of him lies a problem almost as important as his primary medical education, and one which defies efforts at satisfactory solution; for, as has been pointed out so often, medicine is dynamic rather than static, and the education of the physician must be a continuing process throughout his life. From the nature of things this must be largely self education. W. M. Johnson, in a delightful paper on "Clinical Research in Private Practice," defines research as "studious inquiry" and remarks in homely and pertinent fashion "Every general practitioner worth his salt does this every day of the week including Sunday." True enough; but general practitioners are not supermen, and the majority fall soon enough into routine. They must be helped to continue their education; the problem is difficult, because so much of practice depends on technical methods which are difficult to acquire except by personal participation in their execution under one who knows how. On the one hand it may be impossible and it certainly will be temporarily disadvantageous for a busy practitioner to leave his work frequently for a course of postgraduate study; on the other hand it is equally difficult for the undergraduate teaching hospital, without dislocating its service, to give opportunities to graduates to become apprentices—that is, the equivalent of interns—for brief periods, which is the only way certain things can be learned. Postgraduate courses, assemblies, stated periods of study and travel are among the laudable efforts that are currently made. I offer no panacea, for I have none, but I wish to point out that the standards and ideals which the student absorbs from his teachers will necessarily be the greatest factor in stimulating and enabling him to pursue throughout his life a continuing education.

Our astounding progress in solving the secrets of nature leaves little room for doubt that a succession of victories over organic disease, as awe inspiring as the wicked perversion of this progress toward compassing the destruction of humanity which we are witnessing today, lies directly ahead of us. How much they will benefit our race depends on the quality of the human elements in the drama—student and teacher—and the valuation which they place on spiritual issues.

Peter Bent Brigham Hospital.

Comments and Reviews

A STUDY OF AMERICAN RHODES SCHOLARS

Condensation of a paper by Frank L. Apperly, Medical College of Virginia, Richmond, published in The Journal of Heredity, November 1939.

When discussing the implications of birth control some years ago, I expressed the opinion that an undue proportion of the world's great men and benefactors were among the later children of large families and that in earlier times a widespread practice of birth control might have meant a loss of these men to the world. The great man is so largely a product of chance, opportunity, national crisis, force of will and mental ability that it is impossible to draw definite conclusions concerning the antecedent factors likely to lead to greatness. We can, however, measure mental ability with some accuracy and endeavor to correlate it with possible antecedent factors, such as size of family and order of birth in family.

Opinions on these matters vary. Dr. Ronald Fisher says that where there are many children the younger ones tend to grow progressively less intelligent in a ratio corresponding to their numerical place in the brood. Dr. Leta Stetter Hollingworth, whose studies of gifted children are well known, also is said to believe that oldest children or only children tend to be the most brilliant. On the other hand, Dr. Ellsworth Huntington, of Yale, states that one can almost predict a college student's success from the size of his family and that, "other things being equal, the size of the families from which Yale students are derived is closely proportioned to the student's degree of success."

Dr. J. McKean Cattell, in a study of 855 leading American scientists, showed that an unduly large proportion of first sons had attained distinction but that among later children the place in the family made but little difference. There are many theoretical factors which might favor the eldest children. On the other hand, in America, where large families are apt to improve their economic position, the younger sons are more likely to be sent to college than the older ones. Furthermore, there is a higher prevalence among the eldest children of certain physical defects. First children have a lower birth weight than the younger members of the family and a higher stillbirth and infant mortality and a higher rate of certain forms of early mental deficiency and epilepsy. While Dr. Cattell's investigation, made more than thirty years ago, seems to be the most nearly complete answer to the problem, there is an element of chance, difficult to assess, in becoming a "leading scientist." The economic factor, for example,

sometimes compels a potential first rate scientist to enter business or practice a profession. Many other things may make or unmake a man before he reaches the age of distinction.

STUDY OF AMERICAN RHODES SCHOLARS

With these varying opinions in mind, I undertook to study a group of men chosen purely on intellectual and personal qualifications at an age early enough to overcome in part at least the element of chance in attaining distinction. I selected for study the American Rhodes Scholar group and sent a questionnaire to all ex-Rhodes scholars living in America, and with the help of C. K. Allen, warden of Rhodes House, Oxford, to 166 American and British Rhodes scholars then at Oxford. Information was thus obtained from 930 men. These scholars were grouped in a table according to the size of their families and to their own position in these families. In another table the female children of these families were ignored and a similar analysis made of the male members only.

The tables show the great predominance of the eldest ones in small families, a predominance which, however, diminishes with increasing family size. This is in agreement with Cattell's investigation. The second striking result of these tabulations is the especially predominant position of the "only" boy. The table which included only the male members of the family showed that 8.4 per cent of the Rhodes scholars were "only" children, while the other table, which included both sexes among the children in these families, showed that 27 per cent of the group were "only" children. This would indicate that, whereas the only child has some slight preponderance, the "only" boy with one or more sisters predominates in qualities which in the opinion of those who selected them as Rhodes scholars were most likely to make an unusually gifted and useful citizen. Another noteworthy result is that in the larger families the figures appear to be more evenly distributed, with however, as far as the small numbers are reliable, a tendency for the scholars to appear at the end, especially in families of ten or more children. The fact that the only boy with sisters is so far ahead of any other boy with a corresponding number of brothers, or brothers and sisters, appears to indicate the operation of some home influence rather than an economic or biologic factor. Is the only boy in a family of girls less distracted from his studies than he would be by brothers? Does he have to face and solve his problems alone and thereby gain personality and ability? Is he given more

chances for education than would be the case if his chances had to be shared with other brothers? Other factors suggest themselves, but, whatever the answer, it seems fairly clear, as far as we can judge from the facts presented,

that the eldest child in small families is more likely to have the fullest development of his powers of intellect, leadership and social ability, and therefore be of greater value to the community.

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items to be considered for publication in the Student Section.

Residence for Interns at Ann Arbor

The new residence for interns at the University Hospital, Ann Arbor, Mich., with accommodations for sixty-one house officers, was opened for occupancy December 21. The building has three stories and a ground floor and is designed to permit the addition of two additional stories. It is located just north of the Neuropsychiatric Institute and is connected to the main hospital by means of a tunnel. On the ground floor are a large recreation room, handball court, kitchen, trunk room, housekeeper's apartment and a dark room for camera fans. The majority of the rooms are single, but some are double rooms. On the second floor is a large panelled lounge with built-in bookcases, overlooking the Huron River, the hills and the golf course.

Student Health Service Building at Minnesota

A new \$110,000 building to accommodate the student health service was dedicated at the University of Minnesota, Minneapolis, November 10. Among the speakers were Guy S. Ford, president of the university; Dr. John Sundwall, health director at the University of Michigan, Ann Arbor, and the first director of the student health service at the University of Minnesota when this service was instituted in 1918; Dr. Ruth E. Boynton, present director of the student health service, and Dr. Harold S. Diehl, dean of medical sciences at the University of Minnesota Medical School.

Milwaukee Libraries Consolidate

The Library of the Milwaukee Academy of Medicine and the Library of the Marquette University School of Medicine, Milwaukee, were officially consolidated Oct. 17, 1939, at which time Dr. Irving S. Cutter, dean, Northwestern University Medical School, Chicago, gave the dedicatory address. The newly formed library contains 30,000 volumes, ranging from first editions written by Vesalius, the father of modern anatomy, and Ambroise Paré, the first great surgeon, to the most modern textbooks; also the current numbers of 379 medical periodicals from all over the world. It is the hope of the university authorities that through the medium of the library there will be molded a harmonious link between the medical school and the medical profession.

Tuberculosis Symposium for Students

The College of Physicians and Surgeons of Columbia University, New York, conducted its annual tuberculosis symposium for the students in Amphitheater A at the College, Nov. 9-11, 1939. Dr. James Burns Amberson Jr. discussed "Conceptions of Tuberculosis and their Clinical Implications"; Dr. Haven Emerson, "Epidemiology and Prevention of Tuberculosis"; Florence B. Seibert, Ph.D., "Tuberculin: Its Nature and Uses"; Dr. Max Pinner, "Pathogenesis of Tuberculosis"; Dr. Kendall Emerson, "The Antituberculosis

Campaign in the United States"; Dr. James Burns Amberson Jr., "The Early Diagnosis of Tuberculosis and Case-Finding Methods"; Dr. Oswald R. Jones, "Differential Diagnosis"; Dr. Edith H. M. Lincoln, "Clinical Course of Tuberculosis in Children"; Dr. James Alexander Miller, "Clinical Course of Tuberculosis in Adults"; Dr. Edward Percy Eglee, "General Treatment of Tuberculosis," and Dr. Francis B. Berry, "Surgery in the Treatment of Tuberculosis."

Dimes

The library of the School of Medicine of Louisiana State University, New Orleans, for economical reasons, has decided to drop its subscriptions to all non-scientific publications, except the local daily papers, and to apply the money to subscriptions to medical journals. This decision will especially affect their subscriptions to *Life*, *Time*, and the daily *New York Times*. The *Tiger*, a journal of the school of medicine published by the students, points out that even if students were so inclined, it would be a mistake to limit all of their outside reading to scientific journals. The *Tiger* has placed a milk bottle at the telephone desk to receive contributions to provide for subscriptions to these nonscientific periodicals. It is said that 10 cents from each student would make it possible to subscribe to the three publications dropped and provide means to include an additional one. Should the funds collected be insufficient to provide for all of these publications, the order of preference in subscribing will be, *Life*, *Time*, and the *New York Times*, for as much of the year as possible.

Estimate of Expenses at New York University

According to the bulletin of New York University College of Medicine, New York, the estimated expenses for students taking a full course for one year amount to \$1,155.00. This allows \$600 for general instruction including laboratory, library and medical fees; \$288 for board, \$192 for room, and \$75 for books and other supplies, not including a microscope, which is required of all medical students.

Scholarships and Loan Funds at New York University

The Joseph D. Bryant Scholarship is awarded annually at New York University College of Medicine, New York, to some worthy medical student from Norwich, Chenango County, N. Y. The Charles Hayden Scholarship is awarded annually to a needy male student of the metropolitan New York and Boston areas. The Christian A. Herter Research Scholarship is awarded annually to a student who has demonstrated aptitude for physiologic and chemical research. The Eastern Medical Society Scholarship, the gift of this society, provides full tuition for one student or part tuition for two students of the junior or senior class. The Student Aid Fund is used to aid students who are

beset with financial difficulties in the third or fourth year classes. In addition, New York University College of Medicine offers prizes and medals for outstanding work in various departments. For example, the Glover C. Arnold Surgical Prize is an award of \$50 to a member of the senior class who passes the best examination in general surgery. The Alpha Omega Alpha honorary fraternity awards three prizes annually to the students who have stood highest in the class during their four years of medicine.

New Staff of Student Journal

At a recent meeting the editors for the present year of the *Journal of Wayne University College of Medicine*, Detroit, which is published by the students, were announced as follows: Ben I. Jeffries, editor; Roswell G. Burroughs, associate editor; Mark Dale, alumni editor; Robert B. Rice, business manager; Dean R. Asselin, handbook editor, and Philip L. Nova, news editor. Warren O. Nelson, Ph.D., professor of anatomy, was appointed faculty advisor.

Christmas at Ann Arbor

The entire personnel of the University Hospital, Ann Arbor, Mich., enjoyed a Christmas party held in the Amphitheater and Hospital Library, Dec. 13, 1939. A group of student dietitians contributed colored folk songs; student nurses also took part in the program. A humorous skit was furnished by Drs. Fred J. Hodges and Kyril B. Conger, and Mr. Robert Webb. Representatives of the administrative and professional staffs were in the receiving line.

Class Officers at Indiana

The following class officers for the Indiana University School of Medicine, Indianapolis, have been announced:

Seniors: Elbert Harold Laws, Milan, president; Charles Champ McVaugh, Pendleton, vice president; Roland E. Miller, Plymouth, secretary, and Andrew C. Offutt, Spiceland, treasurer.

Juniors: Morris C. Snyder, Amboy, president; Embree R. Rose, Linton, vice president; Robert M. Maurer, Brazil, secretary, and John F. Ling, Hebron, treasurer.

Sophomores: Charles E. Green, Paragon, president; John Brink, Gary, vice president; Welborn Britton, Indianapolis, secretary, and Robert Peacock, Dunkirk, treasurer.

The Student Activity Plan at Tufts

The student body at Tufts College Medical School, Boston, organized in 1932 the Student Activity Plan for the purpose of developing a broader cultural atmosphere and a closer unity among the students. The board of directors consists of the presidents of each of the four classes, one student chosen from each class by the dean for a one year term, an honorary member from the alumni, the dean, the bursar and an honorary member from the faculty. Only the students on the board have voting power, with the exception of the dean, who has a complete veto power on all measures brought forth by the board of directors. The board of directors cannot change any phase of the Student Activity Plan with reference to the functions, the policies or the allocation of funds without first submitting such matters to all four classes for consideration, three of which must approve before the matter submitted can be adopted by the board. The students on the present board of directors are: chairman, Walter E. Deacon, '41; treasurer, Herbert E. Flewelling, '41; secretary, Arthur F. Buckley, '42;

Paul E. Black, '40; John F. Paget, '40, and John F. Gager, '42. All students are members in the Student Activity Plan, to which they contribute \$5 a year.

Among the activities to which the Student Activity Plan gives counsel and financial aid are the following:

1. Medical History Club, which holds from four to six meetings a year.
2. Sir William Osler Society, organized for the purpose of honoring scholarship and serving as a tangible reward for the attainment of high distinction in medical studies, to which society six juniors and four seniors are elected each fall.
3. The Scientific Forum, organized to delve into scientific literature and to have monthly papers presented by members chiefly from the second and third year classes. These meetings are held at the homes of the various physicians on the faculty.
4. Fourth Year Students Optional Fund, which is accumulated for four years and then used for any activity which the senior student body shall approve, such as a year book, a banquet, a class picture or a gift to any department of the school.
5. Medical Students Loan Fund, established to provide temporary loans to needy students on application in writing to the Loan Committee. Loans must be paid, together with 6 per cent interest a year, before the beginning of the following year and in the case of seniors before commencement.
6. Building Fund, which runs for five years ending in 1940, with the understanding that if the trustees of the college then are not disposed to erect a building the fund will revert to such other funds as the student body approves. The purpose for this fund was to construct a building that would provide conference rooms, recreation rooms for students, a new library or a new amphitheater or administrative and faculty offices.
7. Tufts College Medical Journal, which is published four times a year by the students.
8. The William Harvey Society, which provides speakers to address the student body from time to time.

Marquette Alumni

Dr. L. L. Adamkiewicz, a graduate of Marquette University School of Medicine, Milwaukee, in 1916, and a medical inspector in the U. S. Navy, is the chief medical officer with the present Antarctic expedition under Rear Admiral Richard E. Byrd.—Drs. Arthur J. Vandergrind and George T. Ferguson, graduates of Marquette University School of Medicine in 1937 and 1938, respectively, and now lieutenants in the U. S. Navy Medical Corps, are serving on the Yangtze River patrol of the Asiatic squadron of the navy.

Columbia's Medical Library

The number of books loaned and used in the Library of Columbia University College of Physicians and Surgeons, New York, in the year ending June 30, 1939, was 94,695, an increase of 14.8 per cent over the previous year. A part of the increase in the use of the library facilities was due to changes in the methods of instruction at the school and to the students' greater employment of library facilities owing to stimulation by the library staff. Lectures on the use of the library were given by the medical librarian to some of the first year students, emphasizing particularly how to use the various indexes to the literature available in each particular field.

Automobile Accident

Frank R. Cunningham, aged 24, a sophomore student at Temple University School of Medicine, Philadelphia, was killed in an automobile accident, Dec. 18, 1939, at Daytona Beach, Fla., while enroute to his home for the holidays in Miami Beach. With him were his father and mother and a former Yale classmate, all of whom were killed when their car struck a parked truck.

Alpha Omega Alpha

The office of the dean of Woman's Medical College of Pennsylvania, Philadelphia, reports that Rose H. Klein and Barbara J. Harris, fourth year students at the college, have been elected to Alpha Omega Alpha.

The Gorgas Medical Society at Alabama

The Gorgas Medical Society is an undergraduate society at the University of Alabama School of Medicine, University, founded in honor of William Crawford Gorgas, an Alabamian, former surgeon general, U. S. Army Medical Corps, former President of the American Medical Association and in charge of sanitation during the building of the Panama Canal. All students of the school become members of this society at the end of the first semester, but to be elected a fellow of the Gorgas society is the highest formal honor for any student in the school. Election to fellowship is based primarily on scholarship but is the result secondarily of secret choice of both faculty and students for qualities of character, personality and general promise for future usefulness in the profession. The details of the election to fellowship are as follows:

Each spring, after grades for the first three semesters are available, the dean's office submits to the faculty a list of students who, in order of scholastic rank, comprise the upper third of the class. From these names each teacher of professorial rank selects about one fifth of the class, listing them in the order of his personal choice, based on his own estimate of each student's scholarship, character, personality and general promise. In faculty meeting these individual lists are posted and a composite weighted list of nominees is prepared and approved by joint faculty action. The names on this weighted list are mimeographed alphabetically and submitted as ballots by the faculty adviser to the second year class in called meeting. Each member of the class votes "yes" or "no" before each name. Any ballot without a vote before every name is void. The ballots are folded and collected by a committee of students appointed by the president and approved by the faculty adviser. Nominees who receive a two-thirds favorable vote are elected fellows and their names published in the school bulletin.

The students elected to fellowship in the Gorgas Medical Society in 1938-1939 school year were William Alvin Camp, Charles Stafford Clay, Jane Mayse Matthews, John Mial Skeats, Henry Albert Weitz, James Carter Williams and William Gross Wood.

Temple University

Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, addressed the student body of Temple University School of Medicine, Philadelphia, January 3 on "American Medicine and the Government."—The three local chapters of Phi Rho Sigma medical fraternity held their initiation ceremony jointly at the house of the University of Pennsylvania Chapter Dec. 9, 1939. Among the thirty initiates inducted, the following are the new members of the chapter at Temple University School of Medicine: Harry Leroy Allen, Joseph E. Durnin, William F. Hanisek, Clarence L. Lehman, John Y. Leiser, Howard E. Pratt, Donald H. Rice, Edward C. Uhrich, Grover F. Zerbe and Taras H. Rybachok. The joint ceremonies, which were begun in the afternoon, were concluded with a dance at the Hotel Stephen Girard.

Scientific Activities of Undergraduate Students

According to the November 1939 *Bulletin of the Minnesota Medical Foundation*, Roger M. Reinecke, '40, University of Minnesota Medical School, Minneapolis, is studying the metabolism of fructose in hypophysectomized rats in the physiology department as the result of a Sigma Xi prize won last spring.—Harry A. Wilmer II, '40, has been studying the growth changes in the newborn and the adult and the blood supply of various organs by means of injections which permit the tracing out of the ramifications of the arterial tree. This work has been done in connection with Richard E. Scammon, Ph.D., and Dr. Elexious T. Bell, respectively.—Fred Kolouch Jr., '40, winner of the Cullis Prize in surgery last spring, is continuing work this year on the cytology of inflammatory exudates.—Frederick P. Sedgwick, '40, has been carrying on studies on the effects of digitalis glucosides on the portal and other venous pressures in the dog.

Michigan Personals

At an election November 10 the freshman class at the University of Michigan Medical School, Ann Arbor, elected Ralph D. Mahon Jr., Milan, Mich., president; Oscar A. Nelson, Lamar, Colo., vice president; Margaret F. McMahon, Toledo, Ohio, secretary.—James Henry DeWeerd, Holland, Mich., and Miss Elizabeth Alice Clark, Columbia City, Ind., members of the senior class of the University of Michigan Medical School, were recently elected to membership in Phi Kappa Phi, national honorary society.

Fees at Tulane

The tuition at Tulane University of Louisiana School of Medicine, New Orleans, is \$400 a year, excluding certain other fees amounting in the four years to \$188. The total for the four years is \$1,788. The library fee, for example, totals \$8 for the four years, the medical service fee \$40, the breakage deposit \$60, the gymnasium athletic fee \$40 and the graduation fee \$10. The medical service fee of \$10 a year provides for medical attendance by the university physician and for reasonable hospital expenses in cases of ordinary illness, under the rules of the Infirmary Committee. This medical service fee is required of all nonresident students, while resident students may avail themselves of these privileges provided they pay the fee at the time of registration. The student fee of \$10 is applied by a joint committee to the support of various student activities and entitles each student to a copy of the annual publication and the weekly paper (The Hullabaloo). All students are required to pay this fee. Furthermore, each student entering the medical school is required to furnish his own microscope. Students are advised not to purchase microscopes or other equipment or books until they report for registration in September. Information about houses for boarding and lodging may be obtained from the registrar of the university. The price usually paid by students varies from about \$37 to \$45 a month. The school reserves the right to change the fees at any time for any year of the four year course.

Scholarships and Prizes at Tulane

For the promotion of rural health services, the Commonwealth Fund of New York has provided four scholarships of four years each at Tulane University of Louisiana School of Medicine, New Orleans, to be awarded each year to students from the state of Mississippi. These scholarships provide \$1,000 a year. The recipient must agree to serve at least a two years' internship in an approved hospital and then return to Mississippi to practice medicine in a rural section or a town of not more than 12,000 people for a period of three years. The Breaux Scholarships at Tulane, established by a legacy from the late Judge Joseph A. Breaux, are awarded annually to a limited number of students from Louisiana who meet certain regulations with regard to scholarship, character and industry. The value of these scholarships is \$1,000 a year. The scholarships are a gift and involve no contractual or vested privilege of any kind. The Isadore Dyer Memorial Prize for medical scholarship is awarded annually to the graduate making the highest combined average for the full four years' course. It consists of a gold medal and sometimes a small sum in cash. The Sidney K. Simon Memorial Prize of about \$50 is awarded to students who make the best grades in any one of the following subjects: diseases of the digestive tract, nutritional diseases or tropical medicine. The Jacob C. Geiger Medal, available to seniors or graduate students, is offered yearly for the best thesis on a public health problem that is of importance to either the Southern States or countries contiguous to the Southern States.

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A STUDY OF THE OCCIPITO- POSTERIOR POSITIONS OF THE VERTEX

ANALYSIS, MANAGEMENT AND RESULTS IN
106 CONSECUTIVE CASES

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AND

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RALEIGH, N. C.

In a study of occipitoposterior positions of the vertex, one should turn to the three fundamental branches of medicine—anatomy, physiology and pathology—in order to obtain the foundation for the understanding of this complicating obstetric problem.

The anatomy should include the normal female pelvic measurements and the normal measurements of the fetal head. The physiology should give one the mechanism of the engagement of the fetal head in a maternal pelvis; and the pathology the abnormal factors present when the fetal head tries to engage in the posterior position. It should explain how this position differs from the normal engagement of the occiput anterior.

The fetal head presents at the pelvic brim in a military attitude, sitting erect on the shoulders. The diameters opposing each other are the occipitofrontal of from 11 to 11.5 cm. and the suboccipitobregmatic of from 9 to 9.5 cm., while the normal pelvis presents at the inlet an anterior-posterior diameter of 11 cm., a transverse diameter of 13.5 cm. and an oblique diameter of 12.75 cm. As the head presents at the pelvic brim, the anterior and posterior fontanelles are in the same pelvic plane and meet equal resistance. The head and axis of the body at this time can be compared to a two arm lever, the fulcrum of which is at the junction of the spine with the occipital condyles. The anterior or sincipital end of the fetal head is normally longer than the posterior or occipital end. As the uterus contracts, the fetal spine is straightened and the head descends. The sinciput and occiput meet equal resistances in the bony pelvis, the cervix and the levator ani muscles; the longer or anterior end of the fetal head is held back while the shorter or occipital end descends, and the result is flexion. This flexion changes the engaging part from an anteroposterior diameter of from 11 to 11.5 cm. into a suboccipitobregmatic diameter of from 9 to 9.5 cm. The occiput, the most dependent or leading portion of the fetal head, strikes the pelvic floor, made up mainly of the levator ani muscles, which hang

like a sling to form a trough, the sides of which point downward, inward and forward, directing the occiput or leading part into the anterior position, where it escapes beneath the symphysis pubis.

PATHOLOGY OF ENGAGEMENT AND DESCENT

In occipitoposterior positions the mechanism is disturbed, and instead of the normal suboccipitobregmatic diameter of 9.5 cm. one has the occipitofrontal diameter of 11.5 cm. trying to get into the pelvic brim. When the occiput is anterior the parietal eminences have sufficient room in the widely dilated anterior portion of the pelvis; but when the occiput is posterior these eminences are impinged on by the promontory of the sacrum retarding and preventing engagement of the head.

The occipitoposterior position may terminate in one of two ways: First, the least frequent but the most formidable type of case is when pain continues, the cervix dilates but the head remains high. Progress comes to a standstill, deflection occurs and a brow may develop. The second, most common, but least formidable type of case is when the cervix dilates, partial flexion takes place, and the occiput descends to terminate in one of three ways: (1) if pain continues strong with forceful uterine and voluntary contractions of the muscles, the occiput strikes the pelvic floor and rotates downward, inward and forward, where it can be delivered in the normal position; (2) the occiput, taking the lead, descends into the pelvis but is arrested in the transverse position; (3) the occiput finds it easier to rotate posteriorly and passes into the hollow of the sacrum, where it is delivered as such.

ETIOLOGY

The one constant finding in occipitoposterior positions of the vertex is deflection or failure of flexion of the fetal head. This presents the problem of the larger occipitofrontal diameter entering the pelvic brim rather than the shorter and normal suboccipitobregmatic diameter.

There are many causes given in textbooks for this posterior position, the various authors enumerating anomalies of three groups: (1) anomalies of flexion, (2) pendulous abdomen and (3) primary brachycephalia, the latter a condition in which the anterior and posterior ends of the fetal head are of equal length. The very frequent occurrence of this posterior position (from 25 to 35 per cent) would almost place it in a class of normal.

From our experience we have concluded that those cases in which flexion and rotation fail to occur present another condition which is an anomaly of the pelvis. This distortion of the female pelvis is usually a contraction of the type designated as the simple flat pelvis

All of the cases presented here were from private practice.
From the Department of Obstetrics and Gynecology, Mary Elizabeth Hospital.
Presented before the Tri-State Medical Association of Carolinas and Virginia, Feb. 21, 1939.

in which the anteroposterior diameter of the inlet is shortened, owing to the slipping downward of the promontory of the sacrum.

DIAGNOSIS

Diagnosis is accomplished by palpation of the fetal extremities anterior and to the left when the occiput is in the right posterior position. The fetal heart, although expected to be on the right and posterior,

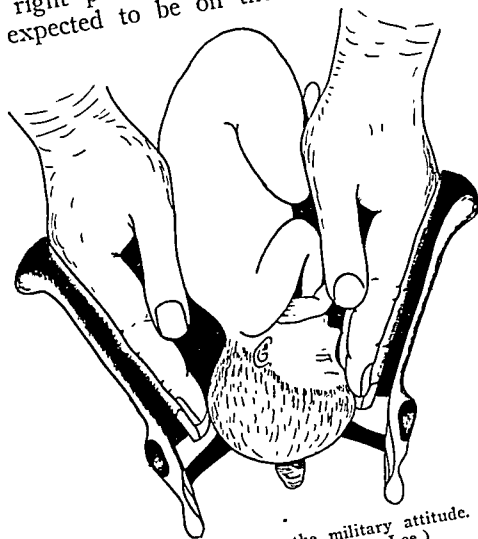


Fig. 1.—Fetal head presents in the military attitude. Occipitofrontal diameter attempting engagement. (After De Lee.)

may be anterior on the left, owing to the fetal thorax being anterior and transmitting the sound into the latter position. For this reason the location of the fetal heart sound may, if depended on, lead to serious error in diagnosis and treatment. If the cephalic prominence is on the left, it suggests the right position.

TABLE 1.—Grouped According to Parity

Gravida	Number of Cases
1.....	69
2.....	20
3.....	7
4.....	7
5.....	1
6.....	1
7.....	1
8.....	1
No data.....	4

TABLE 2.—Grouped According to Age

Age	Number of Cases
20 to 30.....	70
30 to 40.....	25
Under 20.....	2
No data.....	6

If, in the presence of normal pelvic measurements, the head remains unengaged in labor, a posterior position is suggested. Any instance in which a primiparous woman begins labor by rupturing the membranes without previous pain suggests a posterior position. Vaginally, one can more frequently feel the large fontanel when the occiput is posterior, for this fontanel is then in a lower position, owing to the military attitude of the fetal head.

It is our practice before applying forceps always to palpate the ear and thereby determine beyond a doubt the exact position of the head.

TREATMENT

The treatment of the occipitoposterior position cannot be set forth in ironclad rules, but there are certain principles which guide our technic. These are as follows:

1. Prophylaxis: Antepartum pelvimetry is important in detecting anomalies, especially the common flat pelvis.
2. It is important to preserve the patient's strength by giving easily digestible and nourishing foods.
3. Previously we have thought it important to prevent a large amount of pain by heavy sedation, but experience has taught us that this frequently results

TABLE 3.—Multiparas with Previous Abnormalities of Pregnancy

Type of Abnormality	Number of Cases
Forceps delivery.....	7
Infection.....	1
Hydrocephalus.....	1
Long labor.....	1
Cesarean section.....	1
Eclampsia.....	1
Face presentation.....	1
No difficulty.....	8

in less uterine contraction, uncontrollability of the patient, delay of the first stage of labor and the necessity for a more radical form of delivery. We now feel that it is much better to allow the patient to undergo the first stage of labor with light sedation maintaining the conscious state and cooperation of the patient. If fatigue develops, it is better to give a substantial dose of medication occasionally (morphine one-fourth grain, or 0.016 Gm.), allowing her a number of hours of rest and then permitting her to proceed as previously. This morphine is never administered closer than four hours to delivery, and it should be stated that we use morphine sparingly and with great caution on account of its depressing effect on the fetus.

4. Preservation of the bag of waters is important in occipitoposterior positions if the head is high and

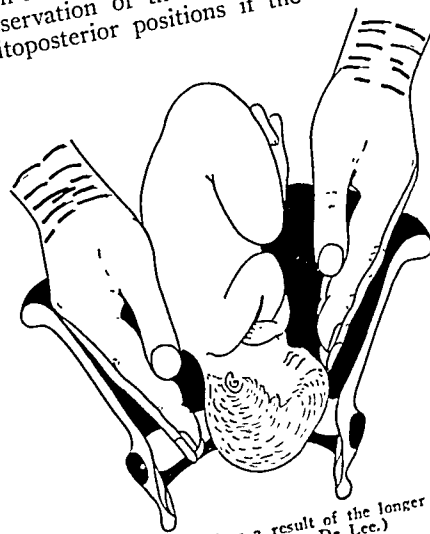


Fig. 2.—Flexion completed as a result of the longer anterior portion of the fetal head being held back. (After De Lee.)

the presenting part broad, as contraction and retraction are inefficient compared with the normal acutely flexed anterior occiput.

5. In the management there are three things to wait for. These are (a) dilatation, (b) engagement and (c) rotation. While waiting for dilatation we apply a Beck (many tailed) binder and insert a Caldwell pad. The pad can be improvised with a well folded turkish towel.

This should be inserted in the flank corresponding to the position of the fetal back. Caldwell has shown that the intra-uterine fetus responds to pain stimuli, and the irritating pack causes the fetus to move away from

TABLE 4.—*Pelvic Measurements*

Measurements	Number of Cases	Measurements	Number of Cases
True conjugate		Posterior sagittal	
7.5 cm.	1	7.0 cm.	1
8.0 cm.	0	8.0 cm.	1
8.5 cm.	4	8.5 cm.	6
9.0 cm.	16	9.0 cm.	6
9.5 cm.	25	9.5 cm.	4
10.0 cm.	27	10.0 cm.	17
10.5 cm.	5	10.0 plus cm.	3
No data.....	28	10.5 cm.	2
		11.0 cm.	1
Tuberischli		External conjugate	
6.0 cm.	0	16.0 cm.	1
6.5 cm.	2	17.0 cm.	10
7.0 cm.	15	17.5 cm.	4
8.25 cm.	5	18.0 cm.	20
7.5 cm.	20	18.5 cm.	9
8.0 cm.	25	19.0 cm.	17
8.5 cm.	14	19.5 cm.	5
9.0 cm.	6	20.0 cm.	9
No data.....	19	20.5 cm.	3
		21.0 cm.	5
		21.5 cm.	0
		22.0 cm.	2
		22.5 cm.	1
		No data.....	18

it (anteriorly). If dilatation is unduly delayed, progress may be improved by forcing the anterior end of the fetal head upward and thereby increasing flexion.

6. After complete dilatation, if the head remains unengaged for one hour or more and no disproportion exists we resort to internal podalic version.

If the head engages and comes to the spines, the patient is given two hours or more for rotation, while if the head is below the spines we allow only one hour

this point. Care is taken not to push the head upward, for dislodging it usually results in nonengagement. To apply forceps under such conditions may result in grave danger to mother and baby.

7. As will be seen from the following data, the delivery is usually then completed by the application of the axis traction forceps in mid or low mid pelvis. In this case the right blade (in the right position) is ordinarily introduced first in an effort to maintain the anterior rotation accomplished manually. However, outlet forceps are often all that is necessary, and occasionally the patient is permitted to deliver spontane-

TABLE 5.—*Loss of Blood and Length of Labor*

Postpartum hemoglobin	
Lowest.....	37%
Highest.....	86%
Average.....	68%
Loss of blood	
Largest (estimated).....	600 cc.
Average (estimated).....	164 cc.
Length of first stage of labor	
Longest.....	96 hours
Shortest.....	1½ hours
Average.....	23 hours
Length of second stage of labor	
Longest.....	35 hours
Shortest.....	5 minutes
Average.....	3 hours
Length of total labor	
Longest.....	103 hours
Shortest.....	2 hrs. 40 min.
Average.....	26½ hours
Average length of third stage of labor twenty minutes	

ously. It is often an aid in fixing the head in the anterior position to have an assistant apply pressure over the breech until the forceps have been applied or until a few labor pains have driven the head deeper into the pelvis.

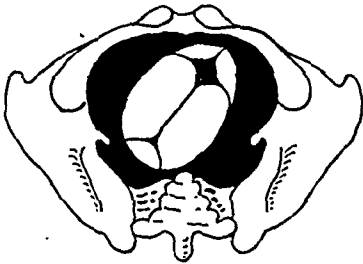


Fig. 3.—Head in the right occipitoposterior position. (After De Lee.)



Fig. 4.—Partial rotation; occiput in the right transverse position. (After De Lee.)

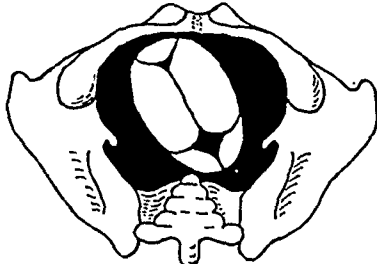


Fig. 5.—Rotation of the occiput to the right anterior position. (After De Lee.)

or more to accomplish rotation. These rules are necessarily modified according to the indications in each labor. We have learned through experience and results (low fetal mortality) that in certain cases when the physical condition of the patient and the fetus are satisfactory it is better to allow labor to continue for a reasonable length of time than to enter at once (while molding and engagement are yet incomplete) into a technical and difficult instrumental rotation and delivery.

TECHNIC OF MANUAL ROTATION

If the head fails to rotate, we insert the whole hand (left in the right position, right in the left position) and grasp the head between the thumb and fingers with the arm supinated. The head is turned as the arm is pronated, and the free hand of the operator manipulates and pulls the anterior shoulder to the left or to the right. The rotation is carried on until the sagittal suture is near or directly anteroposterior or even beyond

STATISTICAL STUDY

Our statistics were obtained from 106 consecutive and unselected cases, of which twenty-five were referred; eighty-one were our own cases. They include the right occipitoposterior, the right occipitotransverse and the left occipitoposterior and transverse positions. Of the series, fifteen cases were of the left occipitoposterior position; ninety-one cases came under the classification right occipitoposterior or transverse position.

The tabulated material is in some cases incomplete. Where this is true, it is due to inadequacies in the hospital record existing because so often these women were admitted to the hospital after a period of prolonged difficulty in the home. Hence many of them were seen for the first time shortly before therapy was instituted. All records are included here because where one may be incomplete in one detail it may be complete in another, and where percentages are quoted they have

been derived from the available complete data rather than from the series as a whole.

No attempt has been made to consider the transverse position separately. We regard it as having originated from a posterior position, representing an intermediary stage in its rotation to the more favorable anterior

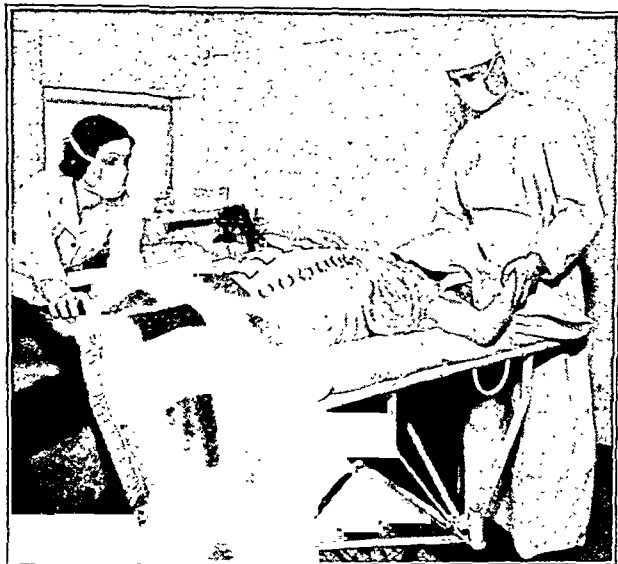


Fig. 6.—While waiting for dilatation we apply a Beck (many tailed) binder.

position. Finally it will be noted that not all the data are strictly pertinent to the posterior position only, but that such items as age and fetal sex seem applicable and more or less constant in any series of statistics on obstetrics.

PREVIOUS COMPLICATION; PELVIC MEASUREMENT

When an obstetric complication occurs because of an abnormality of the bony pelvis, it would be expected that this abnormality would be constant and that the

TABLE 6.—*Rupture of Membranes*

	Number of Cases
Before or at onset of labor.....	18
Artificially, to induce.....	2
Artificially, after dilatation.....	12

TABLE 7.—*Analgesics Used*

Analgesic	No. of Cases
Morphine and scopolamine plus scopolamine or magnesium sulfate	76
Morphine and scopolamine plus scopolamine or magnesium sulfate plus ether oil.....	7
Pentobarbital sodium plus scopolamine.....	5
Sodium amytal plus scopolamine.....	4
Chloral, bromides and other drugs.....	3
No analgesic	18

complication would recur were it not for the very definite variable—the size of the fetus. It is therefore of interest to inspect the history of the multiparas in this group with the expectation of finding previous obstetric difficulties.

Accurate pelvic measurements were possible on all patients receiving their antepartum care from us. The more important of these measurements are presented in table 4.

LOSS OF BLOOD AND LENGTH OF LABOR

The long, hard labor exhausts the woman, depletes her reserves and is often terminated by a difficult instrumental delivery and more than ordinary loss of blood.

TABLE 8.—*Cases Showing Postpartum Fever (100.4 F. for Three Days)*

Diagnosis	Number of Cases
Toxemia.....	2
Pneumonia.....	2
Pyelitis.....	1
Phlebitis.....	1
Retained secundae.....	1
Endometritis.....	3
Anemia.....	1
Generalized urticaria, endometritis.....	1

TABLE 9.—*Complications Contributing to Morbidity*

Diagnosis	
Myocardial weakness.....	2
Mitral heart disease.....	3
Toxemia.....	9
Hemorrhage and anemia.....	2
Pneumonia.....	3
Lung abscess.....	1
Inability to void.....	2
Hydronephrosis and pyelitis.....	2
Shock.....	2
Infection (see table 8)†.....	5
Influenza.....	1
Phlebitis.....	1
Perineal slough.....	4
Laceration into (not through) sphincter.....	1
Cesarean section for contracted pelvis.....	2

* In table 8, listed under first complication, phlebitis.

† Includes endometritis and retained secundae from table 8.

In this connection there was one patient who suffered from postpartum shock who was readily amenable to the usual treatment; also one patient who had pre-delivery shock, although this was on a different basis,

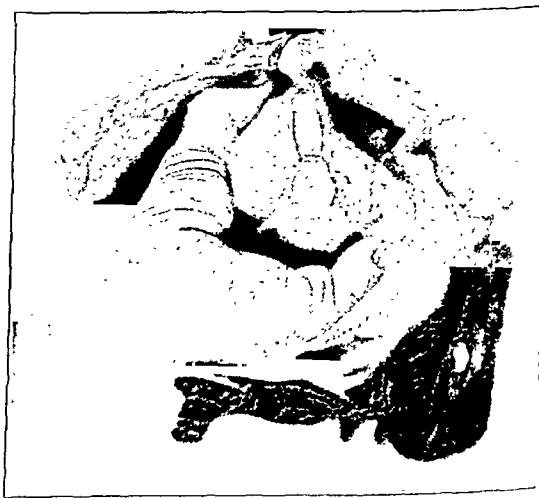


Fig. 7.—In the manual rotation from the right occipitoposterior position the fetal head is grasped in the left hand, the thumb over the left parietal eminence, the four fingers spread over the right parietal bone, the arm supinated. The operator's right hand assists rotation by forcing the shoulder of the fetus out of the right flank toward the midline.

the cause here being the dangerous administration of solution of posterior pituitary (1 cc.) after a prolonged labor in the home; the result was tetanic contraction of the uterus and shock. The effect of these long labors, although partially counterbalanced by the number of women having small babies and therefore comparatively easy labors, is illustrated in table 5.

PREMATURE RUPTURE OF MEMBRANES

The ill fit of the fetal head resulting from its abnormal position and the pelvic contraction creates distorted pressure on the membranes. For this reason it is not at all unusual for the membranes to rupture before any labor is perceptible to the woman. The same thing is seen in the premature rupture of membranes early in the first stage or at least before the first stage is completed. In a few cases in which there was no disproportion or in which this was slight the membranes were artificially ruptured to induce or to stimulate the ineffectual labor pains so often encountered in these cases.

USE OF ANALGESICS

As previously mentioned, the prolonged, continuous use of analgesics for complete effect is not employed; an attempt is made to preserve the patient's cooperation. However, in affording rest and at least partial or temporary relief of pain, analgesics are a strong factor in conserving the woman's strength.



Fig. 8.—The fetal head is held in the grasp of the operator's hand and the occiput is carried to the right anterior position as the arm is rotated from supination to pronation.

In all cases the delivery was completed under ether, gas-oxygen or gas-oxygen-ether.

MATERNAL MORBIDITY

One would expect that the strain of these hard labors and difficult deliveries would materially contribute to the maternal morbidity, and yet it is surprising to note that the average hospital stay for the group was twelve days—not much longer than for the simpler position. However, the longest hospital stay of 103 days tells a different story, because here was an exhausted woman in whom phlebitis subsequently developed, followed by pneumonia (embolic?) and lung empyema, which was eventually treated by open drainage. The shortest hospital stay in the series was five days.

There were various factors that contributed to this maternal morbidity, not all of which can be directly ascribed to the posterior position. An analysis of these cases is given in tables 8 and 9.

FETAL AND MATERNAL MORTALITY

Whatever the occipitoposterior position is to the mother, it is certain that it is an equal or greater complication in the welfare of the baby. Birth injuries and other calamities should be more frequent in this

group. Of the 106 babies delivered from this position there were three fetal deaths and a total of seven babies injured. In reviewing these deaths and injuries, one is forced to the admission that here at least the factors responsible for them are not of a type particularly ascribable to the posterior position.



Fig. 9.—If complete pronation is possible, the occiput may be carried beyond the anterior midline, assuring maintenance of the correction for application of forceps.

In considering the deaths, one was due to a precipitate delivery in the absence of the physician, with aspiration of amniotic fluid; another was due to a tetanic uterus and shock following the administration of solution of posterior pituitary in the home; the final one



Fig. 10.—The occiput has been rotated to the anterior position, with the head in the midpelvis; when the transverse diameter of the outlet is below 8 cm., the delivery is completed with the axis traction forceps.

was due to a short cord twice around the baby's neck with resultant asphyxiation.

One baby showed forceps marks with bruising and trauma to the head greater than is ordinarily encountered with the axis traction forceps. Two babies had symptoms of cerebral hemorrhage, which was proved by bloody spinal tap. Two had cerebral hemorrhage

diagnosed by symptoms which were not supported by spinal tap, or the tap was not performed. Nine babies required artificial resuscitation more than the ordinary amount, and one of these was definitely on the verge of strangulation owing to the cord.

There were fifty-six male infants and fifty female infants. The fetal mortality was 2.7 per cent. The maternal mortality was 0.

TREATMENT

Certainly no report of this nature would be complete without some statement concerning the type of delivery used in this series. This is summarized in table 10.

FOLLOW-UP

Inadequacies in our follow-up records are due to the number of cases being referred from outlying districts, to the incompleteness of old records and to the usual difficulties in getting patients to return a distance for postpartum examination. This six weeks follow-up is outlined in table 11.

CONCLUSION

1. The etiology of occipitoposterior positions is dependent on the presence of abnormally directed forces during labor. This in turn is most often caused by the presence of some pelvic disproportion—usually of the simple flat variety.

2. In treatment there are three cardinal principles: awaiting dilatation, awaiting engagement and awaiting

TABLE 10.—Type of Delivery

Technic	Number of Cases
Low forceps only.....	1
Low forceps, episiotomy.....	14
Mid forceps, episiotomy.....	11
Manual rotation, spontaneous delivery.....	3
Manual rotation, mid forceps.....	5
Manual rotation, mid forceps, episiotomy.....	7
Manual rotation, mid axis-traction forceps, episiotomy.....	20
Spontaneous delivery.....	19
Spontaneous delivery with episiotomy.....	13
Version with episiotomy.....	1
Cesarean section (contracted pelvis).....	2
Forceps rotation.....	1
Voorhees' bag, spontaneous.....	2
Voorhees' bag, version.....	1
Delivered posterior, spontaneous.....	7
Delivered posterior, outlet forceps.....	2

TABLE 11.—Follow-Up Observations

Pathologic Condition	Number of Cases
Bilateral slight laceration cervix.....	38
Bilateral deep laceration cervix.....	4
Erosion.....	31
Cystocele.....	11
Rectocele.....	1
Stellate laceration of the cervix.....	8
Retroversion.....	7
Cystitis.....	1
Prolapse.....	1
No follow-up.....	47

No abnormalities were recorded for the babies seen

rotation. The first two are fundamental in delivery from below, but the last, if not spontaneous in a reasonable time, should be accomplished manually for the welfare of both mother and baby.

3. From statistics on 106 consecutive cases of occipitoposterior positions the following facts seem most evident:

Parity and age are not factors in this complication.

A previous history of difficult labor is frequent but not decisive, since the size of the fetus is a variable.

Most of the patients in whom pelvic measurements were possible presented evidence of moderate shorten-

ing of the true conjugate. This was true also for the intertuberosus measurement.

Long labor and increased loss of blood are frequent, although, when the baby is small, the reverse may be true.

The ill fit of the fetal head at the pelvic brim often leads to premature rupture of the membranes.

Maternal morbidity was somewhat higher in this group.

The fetal mortality was 2.7 per cent.

The maternal mortality was 0.

306 Masonic Temple.

CUTANEOUS MANIFESTATIONS OF VITAMIN A DEFICIENCY IN CHILDREN

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During the past eight months we have observed nine children, almost all of families on relief, attending the pediatric outpatient department, with cutaneous lesions of vitamin A deficiency similar to those described by Frazier and Hu¹ in Chinese soldiers, by Loewenthal² and by Nicholls³ in prisoners in Africa and India respectively, and in various parts of the world by other observers.⁴ In the United States Scheer and Keil⁵ recorded two cases of scurvy in which these lesions also were present and Jeghers⁶ described cutaneous manifestations in medical students that he had observed for impaired dark adaptation. Also Youmans and Corlette⁷ reported a series of cases in which these cuta-

With the technical assistance of Dorothy Greenberg, B.A. Dr. William Rosenson gave valuable cooperation in this study. From the Pediatric Service of Dr. Bela Schick, the Mount Sinai Hospital.

The oleum percomorphum 50 per cent used in this investigation was supplied by Mead Johnson & Co., Evansville, Ind. Ampules for intramuscular injection, containing 25,000 international units of vitamin A and 800 units of vitamin D in 1 cc. of a vegetable oil, also employed in one case, were furnished by the Abbott Laboratories, North Chicago, Ill.

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neous lesions were present and Steffens, Bair and Sheard⁸ experimentally produced this dermatosis in a healthy human subject.

CLINICAL MANIFESTATIONS

The dermal lesions of our children were symmetrical and located chiefly on the extremities. They were found particularly on the lower extremities on the anterior and lateral surfaces of the thighs and calves and in the patellar region, and less frequently and less markedly on the upper extremities on the lateral and posterior surfaces of the upper arm and in the olecranon region. Also the abdomen, buttocks, back, neck and face were at times involved. The lesions consisted particularly of horny papules formed by keratotic plugs projecting from hair follicles and frequently containing a broken off hair or a coiled unerupted hair. The diameter of the papules probably is directly proportional to the duration and severity of the deficiency and in some reported cases has equaled 0.5 cm. but in our cases rarely exceeded 0.2 cm. If the follicular keratoses are marked they may give the skin a rough grater-like feel, and this dermatosis when mild is often detected more easily by palpation than by inspection. If a large papule is picked out, a gaping hole is left. In the more severe cases the keratosis may also involve the interfollicular skin, which may be rough. Aside from this there is a suppression of the cutaneous secretions as evidenced by a marked dryness of the skin or xeroderma. There may be a moderate degree of pruritus, and there is a loss of hair in the affected areas. In the African and Asiatic races the papules may be pigmented⁹ and in some regions the skin may be generally darker than normal. Negro patients say they "ash" because black skins particularly may show a whitish frosted surface, though this is usually concealed by oiling. A dryness and scaliness of the scalp occur in some cases, and the lesions, when present on the face, slightly resemble acne. The expression "goose-skin" has been applied, but the term phrynoderma, meaning toad-skin, introduced by Nicholls³ and later used by others for this cutaneous disorder, is most descriptive.

The familial occurrence of this dermatosis in our series is interesting, but we are as yet uncertain as to its proper interpretation. In one family there were two sisters with these skin lesions, while the parents and three other siblings had normal skins although the mother had a borderline photometric test for vitamin A deficiency. In another family, containing our only patients not on relief, the mother and two daughters had had this dermatosis since early childhood, and the mother, who has symptoms of night blindness, and also her two daughters, exhibited by test markedly impaired dark adaptation, while the father, the only other member, has a normal skin. Of course the most obvious explanation for multiple cases in a family is the consumption by its various members of the same deficient diet, and the occurrence of this disorder in only some of the members might be due to differences in the food actually consumed by them because of individual tastes and preferences. However, some hereditary disturbance in vitamin A metabolism, interfering with the

utilization of vitamin A or producing an increased minimal requirement for this substance, may be also considered.

PHOTOMETRIC STUDIES

There have been few reports of photometric tests made in individuals with the cutaneous manifestations of vitamin A deficiency. Youmans and Corlette⁷ reported that studies with a visual photometer in some of their cases demonstrated an occasional mild hemeralopia and concluded that in some instances such cutaneous lesions may be the first clinical evidence of vitamin A deficiency, appearing before any eye symptom except a mild hemeralopia detectable only by a photometer. The single other report of which we are cognizant is that of Frazier and Li,¹⁰ who, using a Birch-Hirschfeld instrument, arrived at the opinion that conclusions drawn from photometric testing of visual acuity are likely to be fallacious.

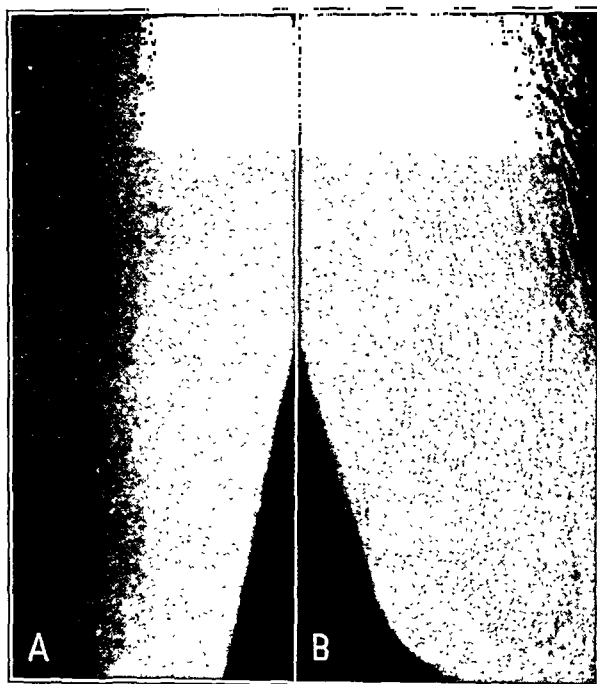


Fig. 1 (case 6).—A, arm before treatment, demonstrating keratotic plugs projecting from hair follicles and loss of hair. B, arm after prolonged administration of vitamin A showing normal skin and regrowth of hair. This is not a hypertrichosis.

Biophotometer studies were made in all our cases. We are aware of the different criticisms of the biophotometer made by various authors.¹¹ Jeans, Blanchard and Zentmire,¹² in their original paper on this instrument, pointed out many of the sources of experimental error and the methods for minimizing them. Only recently Booher and Williams,¹³ testing adults, concluded that the biophotometer may be adequate for detecting marked dysadaptation. Furthermore the series of biophotometric curves obtained by Jeghers⁶ during the production and cure of experimental human

10. Frazier, C. N., and Li, H. C.: Vitamin A Deficiency in Man: Resolution of Cutaneous Lesions Following Parenteral Administration of Carotene, *Chinese M. J.* 54: 301 (Oct.) 1938.

11. Snelling, C. E.: The Biophotometer as a Test for Vitamin A Deficiency, *J. Pediat.* 13: 506 (Oct.) 1938. Palmer and Blumberg.¹⁴ Palmer.¹⁵ Jung.¹⁶ Isaacs, Jung and Ivy.¹⁷

12. Jeans, P. C.; Blanchard, Evelyn, and Zentmire, Zelma: Dark Adaptation and Vitamin A: A New Photometric Technic, *J. A. M. A.* 108: 451 (Feb. 6) 1937.

13. Booher, Lela E., and Williams, D. E.: A Study of the Biophotometer as a Means of Measuring the Vitamin A Status of Human Adults, *J. Nutrition* 16: 343 (Oct.) 1938.

8. Steffens, L. F.; Bair, H. L., and Sheard, Charles: Photometric Measurements on Visual Adaptation in Normal Adults on Diets Deficient in Vitamin A, *Proc. Staff Meet., Mayo Clin.* 14: 698 (Nov.) 1939.

9. Mu, J. W.; Frazier, C. N., and Pillat, A.: Melanin Pigment of the Skin and Conjunctiva in Avitaminosis A in Man, *Chinese J. Physiol.* 11: 247 (March) 1937.

avitaminosis A definitely demonstrate that, properly employed, this instrument can detect the presence and course of impaired dark adaptation due to vitamin A deficiency.

In none of our children were there any eye symptoms, but in every case the readings of the biophotometer have been definitely within the subnormal zone, indicating vitamin A deficiency. This test with the biophotometer was repeated several times before starting therapy both for confirmation as to existing deficiency and to eliminate the factor of training, reported by Palmer and Blumberg,¹⁴ and also the factor of "centripetal drift," mentioned by Jung,¹⁵ in any subsequent improvement of the retina. As additional corroboration in some of our cases we performed what we have termed a therapeutic test, based on an immediate retinal response. On the day on which treatment was begun in these cases an additional preliminary biophotometric test was made and then 200,000 international units of vitamin A was administered by mouth. Subsequent tests made one and two hours later indicated in some cases improvement in the biophotometric reading by a rise from the deficient to the borderline or

of even normal individuals to a single dose of 2,000,000 units of vitamin A as reported by Getz, Hildebrand and Finn.²² However, in some of our cases the immediate response to the dosage employed was disappointing, and betterment in visual tests was attained only after prolonged and intensive therapy. In such instances there was usually a rough parallelism between the improvement of the photometric tests and the progress of the skin, and the biophotometer was then of considerable value in gaging the dosage of vitamin A required.

In one of our cases we are discarding the evidence of the photometer because, although this child repeatedly gave readings that were in the deficient zone, the results of the tests were too erratic to be accepted as reliable. However, this child was typical in all other ways, such as clinical picture and response of the skin to treatment.

TREATMENT AND COURSE

The last three children in our series have so far had less treatment than the others and have shown a marked though not yet a maximal improvement of the skin. The other children have attained a nearly complete

Summary of Cases Showing Cutaneous Manifestations of Vitamin A Deficiency

Case	Initials	Age, Years	Sex	Race	Vitamin A Diet,† Units	Dura- tion, Years	Skin Lesions		Visual Photometric Test,* Millifoot Candles of Light			Comment
							Severity		Before Course of Treat- ment	2 Hours After Test Dose	After Course of Treat- ment	
							Before Treat- ment	After Treat- ment				
1	I. S.	11	♀	W	1,500	2	+++	0	1.95	0.29, 0.47	Sister of I. S.
2	R. S.	7	♀	W	1,700	1	++	0	1.4, 2.4	0.76	0.69	
3	V. F.	10	♀	B	4,000	2	++	0	1.6	0.69	0.45, 0.69	
4	G. G.	13	♀	W	1,400	2	+	0	0.9, 1.3	0.84	0.63, 0.58	Uncooperative Visual tests unreliable
5	L. D.	8	♀	W	1,500	2	+	0	1.9	....	.....
6	A. L.	8	♀	W	2,500	4	+++	0	1.4?, 1.2?	....	0.69?, 0.47
7	E. H.	10	♀	W	5,000	9?	++	±	2.16	0.92	Sister of E. H.
8	E. A.	10	♀	W	2,000	7	++	±	1.9, 2.4	1.9	0.92	
9	C. H.	13	♀	W	5,000	12?	++	±	3.8	....	0.77

* Photometric test after exposure to bright light. Normal is below 0.7, borderline is from 0.7 to 1.0, deficient is above 1.0.

† Vitamin A content of diet was estimated with Jeghers' assumed average values.

normal zone. Such an immediate response of the retina has been obtained also by Edmund and Clemmensen,¹⁶ Friderichsen and Edmund,¹⁷ Mutch and Griffith,¹⁸ Jeghers,⁶ Wald, Jeghers and Arminio,¹⁹ and Lewis and Haig,²⁰ though not by Hecht and Mandelbaum,²¹ and can be elicited only if an adequately large dose of vitamin A is administered. When the preliminary series of tests shows that the deficiency is very marked or when the patient is an adult or nearly adult in size, a larger test dose such as 500,000 units should be used. In this connection we refer to the immediate response

cutaneous recovery following a daily dose of from 100,000 to 300,000 international units of vitamin A in the form of "oleum percomorphum," with no local treatment, no change in diet and with the children still in their home environment. Dosage of at least this magnitude not only may be required for visual improvement, as reported by Getz, Hildebrand and Finn,²² but in most of our cases has been necessary also for cutaneous recovery. We hoped with such doses also to hasten the response of the skin, but nevertheless the cutaneous improvement, as reported by all authors²³ in this field, has been slow, requiring from two to four months of treatment. However, in the more severe case, in which the skin is exceedingly dry and lusterless with rough follicular keratoses, we, like Frazier and Hu,¹ have observed within two weeks renewed activity of the cutaneous glands manifested by perceptible moisture and oiliness, the appearance of a gloss and increased smoothness. The subsequent improvement noted, which requires weeks, is the gradual extrusion and desquamation of the follicular keratoses as minute ricelike bodies, which at first are partly adherent, giving the skin a shaggy appearance. Ultimately with adequate vitamin A therapy and sufficient time there is a regeneration

14. Palmer, C. E., and Blumberg, Harold: The Use of a Dark Adaptation Technic (Biophotometer) in the Measurement of Vitamin A Deficiency in Children. *Pub. Health Rep.* 52: 1403 (Oct. 8) 1937. Palmer, C. E.: The Dark Adaptation Test for Vitamin A Deficiency. *Am. J. Pub. Health* 28: 309 (March) 1938.

15. Jung, F. T.: Centripetal Drift: A Fallacy in the Evaluation of Therapeutic Results. *Science* 87: 461 (May 20) 1938. Isaacs, B. L.; Jung, F. T., and Ivy, A. C.: Vitamin A Deficiency and Dark Adaptation. *J. A. M. A.* 111: 777 (Aug. 27) 1938.

16. Edmund, C., and Clemmensen, S.: On Deficiency of A Vitamin and Visual Dysadaptation. London, Oxford University Press, 1936, 1937.

17. Friderichsen, C., and Edmund, C.: Studies of Hypovitaminosis A: II. A New Method for Testing the Resorption of Vitamin A from Medicaments. *Am. J. Dis. Child.* 53: 89 (Jan.) 1937; III. Clinical Experiments in the Vitamin A Balance in Children After Various Diets. *ibid.* 53: 1179 (May) 1937.

18. Mutch, J. R., and Griffith, H. D.: A Study of Diet in Relation to Health: Dark Adaptation as an Index of Adequate Vitamin A Intake. *Brit. M. J.* 2: 565 (Sept. 18) 1937.

19. Wald, George; Jeghers, Harold, and Arminio, Joseph: An Experiment in Human Dietary Night Blindness. *Am. J. Physiol.* 123: 732 (Sept.) 1938.

20. Lewis, J. M., and Haig, Charles: Vitamin A Requirements in Infancy as Determined by Dark Adaptation. *J. Pediat.* 15: 812 (Dec.) 1939.

21. Hecht, Selig, and Mandelbaum, Joseph: Vitamin A and Dark Adaptation. *J. A. M. A.* 112: 1910 (May 13) 1939.

22. Getz, H. R.; Hildebrand, J. B., and Finn, Milton: Vitamin A Deficiency in Normal and Tuberculous Persons. *J. A. M. A.* 112: 1274 (April 8) 1939.

23. Youmans, J. B.: Newer Clinical Aspects of Vitamin Deficiency Diseases: Vitamin A Deficiency. *Am. J. Trop. Med.* 19: 227 (May) 1939. Also references 1, 2, 3 and 4.

of normal follicles and interfollicular epidermis²⁴ and a regrowth of hair. Even after this has been achieved we have continued vitamin A therapy, because we have found that relapse of visual dysadaptation and cutaneous manifestations may occur after treatment is diminished or stopped.

There is some tendency to seasonal amelioration during warmer weather, which may be due in part to an improved diet and the higher vitamin A content of important foods during the summer, reported by various investigators.²⁵ Seasonal factors favored our results, but in our cases of more than one year's duration the parents felt that the improvement this year far exceeded that of previous summers when no specific therapy had been administered. Furthermore in three cases, equivalent to an untreated control group, treatment was not started until August, when, despite the hot weather and in marked contrast to the treated children, the skin of each of these three children was still strikingly abnormal and the dark adaptation still markedly impaired. Also cutaneous improvement, subsequently produced by vitamin A therapy of these three children, is progressing satisfactorily in spite of the present cold weather. In connection with the seasonal factor, the data of Sweet and K'ang²⁶ on the month of onset of symptoms of vitamin A deficiency in 177 cases in China showed a marked peak in January, February and March, which was attributed to the deficient winter diet, and another peak in July attributed to dysentery, in which the diarrhea prevents absorption of the vitamin.

OCCURRENCE IN CHILDHOOD

Frazier and Hu¹ among 207 cases of this dermatosis found only two children, aged 4 and 5 years respectively, with the characteristic follicular papules and concluded that the lesions usually occur in sexually mature persons between 16 and 30 years of age and not among infants, and that in infancy and childhood vitamin A deficiency may produce a simple xerosis of the skin. Although widely quoted, this conclusion requires revision. Locventhal² in Africa, while examining 1,112 individuals of whom 1,000 were school children, found that over 80 per cent had a dry skin, which he believes is the earliest cutaneous symptom of vitamin A deficiency, and 277 had the follicular lesions. Aykroyd and Rajagopal²⁷ in India, in examining 1,918 school

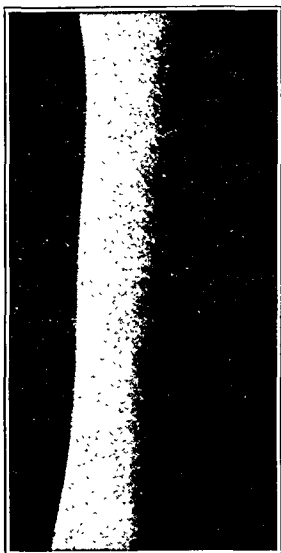


Fig. 2 (case 7).—Arm illustrating keratoses of the hair follicles typical of vitamin A deficiency.

children between the ages of 6 and 17 years, found 129 with these follicular papules and the number affected was higher in the "poor" schools than in the "good" schools. Calculations made from data of Aykroyd and Krishnan²⁸ show that the occurrence of this condition in hostels or boarding homes for school children was about 14 per cent among 719 boys and about 12 per cent among 955 girls, and the incidence varied between 0 and 53 per cent in eleven different hostels containing boys and between 0 and 46 per cent in thirteen hostels for girls. Nicholls³ examined 4,380 school children in India and found 1,175, or 26.8 per cent, with these cutaneous lesions, and the percentage affected varied from 0 and 2.8 in two of the better schools to 83 in a charity school for destitute children where the diet was very deficient. In a subsequent report on an additional 678 children there were 216 with this dermatosis, and Nicholls recommended an inspection of the arms of school children for this condition as one test of the children's nutritional status. We have not yet seen this dermatosis in infancy or very early childhood, but Nicholls states that "Advanced cases in which there are no signs of eye lesions are fairly common in young indigent children after 6 months of age, that is from the time they are weaned." Radhakrishna Rao,²⁹ also in India, states that he has observed cases of this dermatosis in children's boarding and day schools and reports in detail the cases of a boy aged 9 years and a girl aged 6 years. In a later paper Radhakrishna Rao states that the condition appeared to be as common in children of both sexes as in young adults and his youngest patient was 2½ years of age. Goodwin³⁰ in England reported a case in a 10 year old boy and also stated that on searching in the pediatric outpatient department he found several other milder cases, which was confirmed by Mackay.³¹ As a consequence of these reports and as a result of our experience, we believe that, if the possibility is kept in mind, cases presenting the typical follicular lesions of the skin characteristic of vitamin A deficiency will be found not infrequently among underprivileged school children.

ETIOLOGY

The microscopic picture of these cutaneous lesions, reported by Frazier and Hu¹ and by Radhakrishna Rao²⁹ in detail, reveals a pathologic process so typical of vitamin A deficiency that it furnishes strong proof of the cause of the disorder. Briefly, cornified cells, forming a concentric lamellated mass and frequently

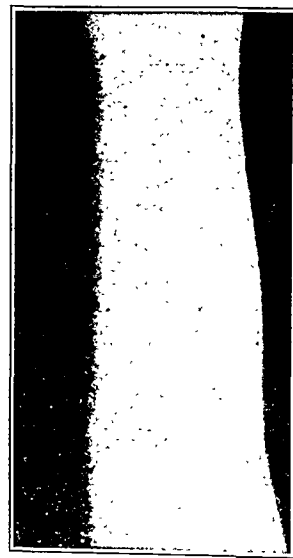


Fig. 3 (case 9).—Sister of patient in figure 2. Arm with similar cutaneous lesions.

24. Wolbach, S. B., and Howe, P. R.: Epithelial Repair in Recovery from Vitamin A Deficiency, *J. Exper. Med.* 57: 511 (March) 1933.

25. Baumann, C. A.; Steenbock, Harry; Beeson, W. M., and Rupel, L. W.: The Influence of Breed and Diet of Cows on the Carotene and Vitamin A Content of Butter, *J. Biol. Chem.* 105: 167 (April) 1934. Wilkinson, H.: The Vitamin A and Vitamin D Contents of Butter: II. Seasonal Variation, *Analyst* 64: 17 (Jan.) 1939. Booth, R. G.; Kon, S. K.; Dann, W. J., and Moore, Thomas: A Study of Seasonal Variation in Butter Fat, *Biochem. J.* 27: 1189 (Nov. 4) 1933.

26. Sweet, L. K., and K'ang, N. J.: Clinical and Anatomic Study of Avitaminosis A Among the Chinese, *Am. J. Dis. Child.* 50: 699 (Sept.) 1935.

27. Aykroyd, W. R., and Rajagopal, K.: The State of Nutrition of School Children in South India, *Indian J. M. Res.* 24: 419 (Oct.) 1936.

28. Aykroyd, W. R., and Krishnan, B. G.: The State of Nutrition of School Children in South India: Part II. Diet and Deficiency Disease in Residential Hostels, *Indian J. M. Res.* 24: 707 (Jan.) 1937.

29. Radhakrishna Rao, M. V.: "Phrynoderma": A Clinical and Histopathology of the Skin in Human Kera-
tosis, *Indian J. M. Res.* 24: 727 (Jan.) 1937; *Studies in Phrynoderma* by
Vitamin A Concentrate, *Indian M. Gaz.* 73: 461 (Aug.) 1938.

30. Goodwin, G. P.: Cutaneous Manifestation of Vitamin A Deficiency, *Brit. M. J.* 2: 113 (July 21) 1934.

31. Mackay, Helen M. M., in note to article by Goodwin.³⁰

containing an atrophic coiled hair, plug the greatly distended upper portion of the hair follicle, and concurrently there is an atrophy of the associated sebaceous gland even to the point of disappearance. A moderate hyperkeratinization extends beyond the follicle over the general surface of the epidermis, and a keratinizing

metaplasia, similar to that of the hair follicles though milder and detectable only by the microscope, affects the ducts of the sweat glands, which also atrophy. That identical cutaneous lesions have not been observed in experimental animals³² does not afford a reason for doubting the etiology because it is established that the distribution in the various epithelial tissues of this pathologic process varies in different species,³² and the susceptibility to cutaneous localization seems to be a characteristic of man.

On the basis of

pathology alone we can conclude that the changes in the skin are very comparable to those that occur in other epithelial tissues³³ in vitamin A deficiency and are therefore strong proof of the etiology of the process.

The high incidence of these cutaneous lesions of a uniform character in individuals with well established symptoms of vitamin A deficiency such as keratomalacia, xerophthalmia and night blindness constitutes one of the strongest proofs that the cause of this dermatosis is a lack of vitamin A. Loewenthal² among 1,000 prisoners diagnosed vitamin A deficiency in eighty-one, of whom seventy-one had night blindness, forty-five had xerophthalmia and seventy-four had this dermatosis. Frazier and Hu¹ found that the majority of their soldiers with keratomalacia had these cutaneous lesions and Nicholls³ reported that all of twenty-one prisoners with keratomalacia had this type of cutaneous involvement. Conversely the individuals with this dermatosis show a high incidence of ocular manifestations of vitamin A deficiency, as indicated by nyctalopia, xerophthalmia and keratomalacia in the severe cases of Frazier and Hu, of Loewenthal and of Nicholls, and as evidenced by impaired dark adaptation by photo-

metric test in the less marked cases reported by Youmans and Corlette⁷ and by us. However, it is possible that in the earlier and milder stages these cutaneous lesions may at least in some cases be the first symptom of vitamin A deficiency and may antedate any impairment of dark adaptation, and even in more marked cases, if photometric tests are not available, these cutaneous manifestations may be the only evidence of vitamin A deficiency.

Dietary investigations, which show that almost all the individuals or groups of individuals reported with these cutaneous lesions have been on a diet deficient in vitamin A, furnishes additional proof of etiology. For example, Nicholls³ in India reported a mental asylum where among 232 patients on the "Ceylon diet" there were about 44 per cent with this dermatosis, while among eighty-one patients in the same institution on a "European diet," differing only by an extra two eggs and 5 ounces of milk daily, there were about 2 per cent affected. Furthermore, the data in two papers of Nicholls concerning a total of 1,823 prisoners suggests that the presence of these cutaneous lesions varies directly with the degree of deficiency of the diet in vitamin A and with the length of time a given deficient diet is consumed. Also Steffens, Bair and Sheard,⁸ of the Mayo Clinic, experimentally produced these cutaneous manifestations, appearing before significant changes in light thresholds but confirmed by biopsy, in a human subject maintained for 190 days on a diet adequate in other factors but furnishing daily only 100 to 300 international units of vitamin A; and after seventeen

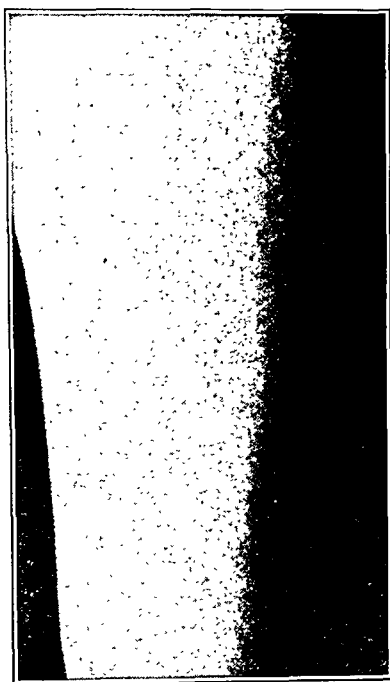


Fig. 4 (case 7).—Thigh showing keratinized plugs in hair follicles.

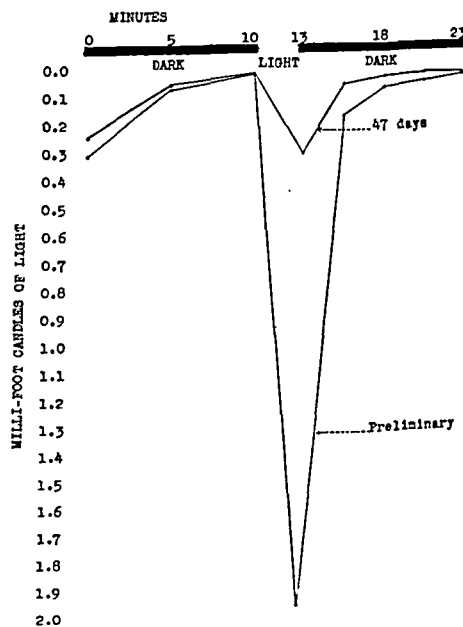


Fig. 5 (case 1).—Diophotometer curves before and after a daily dose of 100,000 international units of vitamin A for forty-seven days.

additional days with vitamin A therapy, these observers demonstrated by a second biopsy from the same subject a normal skin except for the keratotic plugs in the hair follicles. The occurrence of this dermatosis or impaired dark adaptation in some individuals on an apparently satisfactory diet is no disproof of the etiology of these symptoms. In such instances the deficiency may be due to increased or high minimum requirements or, to put it differently, may be due to various

32. Beesey, O. A., and Wolbach, S. B.: Vitamin A: Physiology and Pathology, J. A. M. A. **110**: 2072 (June 18) 1938. Wolbach, S. B.: The Pathologic Changes Resulting from Vitamin Deficiency, *ibid.* **108**: 7 (Jan. 2) 1937. Wolbach, S. B., and Howe, P. R.: Tissue Changes Following Deprivation of Fat-Soluble A Vitamin, J. Exper. Med. **42**: 753 (Dec.) 1925; Vitamin A Deficiency in the Guinea Pig, Arch. Path. & Lab. Med. **5**: 239 (Feb.) 1928.

33. Wilson, J. R., and DuBois, R. O.: Report of a Fatal Case of Keratomalacia in an Infant, with Post-mortem Examination, Am. J. Dis. Child. **26**: 431 (Nov.) 1923. Blackfan, K. D., and Wolbach, S. B.: Vitamin A Deficiency in Infants, J. Pediatr. **3**: 679 (Nov.) 1933. Goldblatt, H., and Benischek, M.: Vitamin A Deficiency and Metaplasia, J. Exper. Med. **46**: 699 (Nov.) 1927. Robertson, E. C.: Recent Work on the Tissue Changes in Vitamin A Deficiency, Am. J. M. Sc. **192**: 409 (Sept.) 1936.

disturbances, some³⁴ of which are already known, that may occur in the series of processes from ingestion of diet at one end through digestion, absorption, conversion, storage, transportation and so on to finally, at the other end, utilization of the vitamin A by the retina and other epithelial tissues. On the other hand, the diet may be so deficient that these cutaneous lesions may occur together with scurvy³⁵ or pellagra.³⁶ However, as Frazier and Hu¹ state, "If one bears in mind the present conception of the pathologic characteristics of the two deficiency diseases, it seems reasonable to assume that the epithelial changes occasionally found in association with scurvy are related to a lack of vitamin A rather than to a lack of vitamin C. This is equally true of other types of avitaminoses, such as pellagra, in which similar lesions of the skin have been observed."

The administration of vitamin A as a therapeutic test to patients with these cutaneous manifestations constitutes one of the most convincing proofs of the etiology and, according to every author, has resulted in complete or nearly complete cutaneous recovery. Loewenthal² for example gave his prisoners 1 ounce of cod liver oil daily and with no other change obtained in nine weeks a cure of night blindness in 100 per cent, of xerophthalmia in 100 per cent and of this dermatosis in 98.7 per cent. Of course the fish liver oils, which have usually been employed, contain both vitamin A and D, but enough is known of the effects of deficiency of these two vitamins to establish that vitamin A is the factor concerned in changes in epithelial tissues. Furthermore, Loewenthal has cured patients with a product containing vitamin A alone, and Frazier and Li¹⁰ have reported a typical patient cured in fifty-one days while still on a deficient diet by daily intramuscular injections of from 1 to 2 mg. of carotene. Our patients were successfully treated while remaining in their own homes with no change in diet or in any other factor except the administration of oleum percomorphum.

ETIOLOGY OF KERATOSIS PILARIS (LICHEN PILARIS, ICTHYOSIS FOLLICULARIS)

Before the etiology of the cutaneous manifestations of vitamin A deficiency had been reported in 1931 by Frazier and Hu, an entity similar both clinically³⁷

and pathologically³⁸ had long been known to dermatologists³⁹ under the descriptive terms keratosis pilaris, lichen pilaris, lichen spinulosus and so on, and Nicholls³ and Radhakrishna Rao²⁹ without expressing a definite opinion pose the question of the etiology of the latter conditions. Ichthyosis follicularis is another synonym, and many of our cases have been

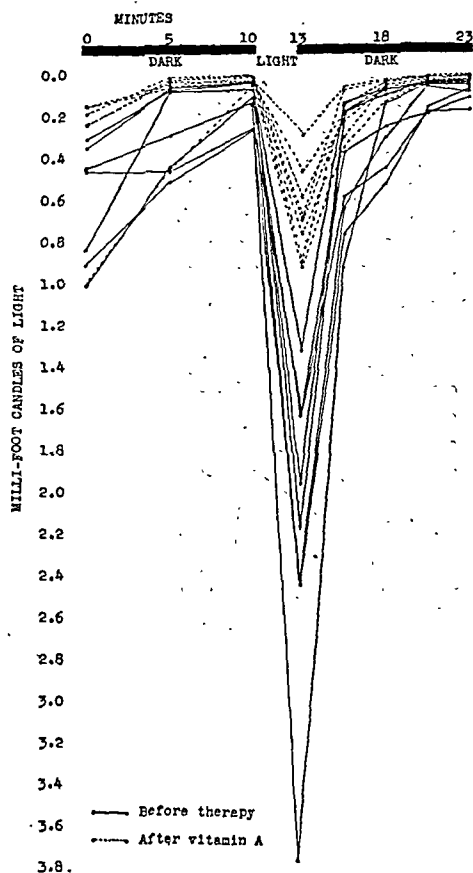


Fig. 6.—Biophotometer curves from eight children before and after prolonged treatment with vitamin A. Normal is below 0.7, borderline is from 0.7 to 1.0, deficient is above 1.0 after exposure to bright light.

diagnosed by others as "ichthyosis." However, every case in the series investigated by us that might have been designated keratosis pilaris, ichthyosis follicularis or the like proved by photometric test to be deficient in vitamin A and responded to vitamin A therapy with a nearly complete or a marked improvement of the skin. On this account and because of the indistinguishable clinical picture and the identical pathologic changes characteristic of vitamin A deficiency, we believe that keratosis pilaris, lichen pilaris, lichen spinulosus, ichthyosis follicularis and other synonyms are merely descriptive terms for the cutaneous manifestations of a vitamin A deficiency.

HUMAN REQUIREMENTS FOR VITAMIN A

Before considering the probable incidence of vitamin A deficiency in America on the basis of the adequacy of the diets consumed by various groups of the popu-

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lation, it is advisable to review the efforts of various investigators to establish definite minimal and optimal standards of human requirements for vitamin A. Unfortunately the estimates arrived at by different authors vary considerably, not only because of different technics in ascertaining such standards but also because of differences in the vitamin A value assigned to foods⁴⁰ by various investigators, and also because of considerable actual variation in the vitamin A content of different specimens of a given food.

Booher⁴¹ states that the minimal daily need both in man and in animals is from 20 to 30 units of vitamin A or from 40 to 50 units of carotene per kilogram of body weight. Lewis and Haig²⁰ employed a special technic for testing the vision of infants in the dark and estimated that a daily vitamin A intake of from 18 to 25 international units per kilogram just sufficed. Edmund and Clemmesen,¹⁶ using the Edmund visual test on twenty-eight prisoners, concluded that 1,370

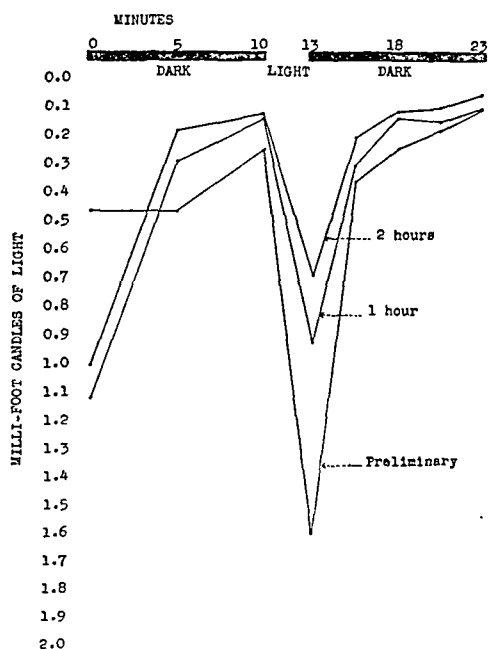


Fig. 7 (case 3).—Biophotometer curves before, one and two hours after an initial dose of 200,000 international units of vitamin A by mouth.

units per person daily exactly covered the minimal requirement. Jeghers⁶ correlated the vitamin A content of the diet with dark adaptation and found that adults with normal dark adaptation consumed more than 4,000 international units of vitamin A while those with night blindness consumed less than this amount and that, the lower the vitamin A content of the diet, the worse the degree of the night blindness. The variance in these estimates may be partly due to differences in the vitamin A value assigned to foods, for Edmund and Clemmesen calculated the vitamin A content of a pint of winter milk with 3.7 per cent fat to be 150 international units, while Jeghers, using assumed average values in round numbers derived from a table of Eddy and Dalldorf,⁴² calculated the vitamin A content of a pint of milk to be 800 international units. Jeans, Blanchard and Zentmire,¹² using

the biophotometer, estimated that the needs of two 11 year old boys were covered by an intake by each of 3,000 units of vitamin A daily, though they did not claim this to be the boys' minimal requirement. Stiebling and Phipard⁴³ quote adaptometer studies of Booher, Callison and Hewston⁴⁴ indicating that the five adults investigated required from 25 to 55 (average 40) units of vitamin A or from 43 to 103 (average 70) units of carotene daily per kilogram of body weight. Stiebling and Phipard state that, in the ordinary American diet, carotene from plant food usually supplies from 60 to 80 per cent of the total vitamin A value, so that the average minimum would be from 58 to 64 units per kilogram, or 4,000 units daily for an adult. As this does not provide any reserves and does not allow for above average requirements, they suggest a 50 per cent margin of safety and estimate that an adult should take at least 6,000 units of vitamin A daily and that a child of school age should receive 5,400 units a day. Cowgill,⁴⁵ deducing the optimal supply from the vitamin A content of human breast milk, suggests that an infant should receive not less than 2,000 units a day and that school children should be given four times their calculated minimal requirements. Finally Booher⁴¹ states that the Technical Committee of the League of Nations recommends a diet for growing children containing from 6,000 to 8,000 international units daily.

INCIDENCE OF VITAMIN A DEFICIENCY IN AMERICA

On the basis of a dietary survey made by the U. S. Department of Agriculture and U. S. Bureau of Labor Statistics covering 4,000 urban families of employed wage earners, Stiebling and Phipard⁴³ conclude that, "with present day choices, diets are often fairly low in vitamin A value even when expenditures for food are relatively high" and that only "about one third of the white families included in the study obtained diets high enough in average vitamin A value to insure good visual adaptation in semidarkness." The per capita weekly expenditure for food allotted in New York City to families on relief falls within the range of the low economic group of Stiebling and Phipard, which spends for food from \$1.25 to \$1.87 a person a week, and in this group an adult consumed an average of 2,200 international units of vitamin A daily, but almost 70 per cent of the diets furnished less than 2,000 units. We believe that, in such low economic strata, moderate deficiency of vitamin A sufficient to produce cutaneous manifestations may not infrequently occur in individual children because of inefficient purchasing and diversion of funds to amusements, clothes and other items, or because of caprice in choice of foods and seasonal variations in diet or in the vitamin A content of foods. Also one of the more important causes is an increased or a higher than average minimal requirement due to individual variation in the need for vitamin A, and we believe that this may explain the occurrence of mild vitamin A deficiency in individuals who are even on a diet ordinarily adequate. Jeghers¹⁰ states that "the minimal

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requirements may be increased by fever, rapid growth, infection, elevated basal metabolic rate, pregnancy, lack of bile or pancreatic secretion, changes in the gastrointestinal mucosa, disturbances of motility of the gastrointestinal tract and hepatic disease."

The occurrence of cases of vitamin A deficiency in America has been predicted not only by dietary surveys but also by the investigations of various authors, who report a considerable incidence both in adults and in children of impaired dark adaptation. To illustrate we will cite only Jeghers⁶ in Boston, who examined 162 medical students and found that 35 per cent gave photometric evidence of vitamin A deficiency and that 12 per cent showed clinical symptoms. In the latter group were fifteen individuals with dry skin, including two cases of hyperkeratosis. At the time of the report all but four had regained with treatment a normal skin texture. Similar impairment of dark adaptation by photometric test has been reported by other investigators,⁴⁷ although the actual percentage abnormal has varied with different authors and with various groups examined and, of course, partly depends on the location of the boundaries accepted as demarcating normal from borderline and borderline from deficient. Furthermore, although refinements in the technic of these tests may influence the percentage of persons found abnormal, all results, including those of Hecht and Mandelbaum²¹ with the adaptometer, show that in any group there is a marked spread between those individuals with the greatest and those with the least powers of dark adaptation. That the latter are deficient in vitamin A is probable because their capacity for dark adaptation is comparable to that of the individuals with experimental human vitamin A deficiency observed by Jeghers,⁶ Booher, Callison and Hewston,⁴⁴ and by Hecht and Mandelbaum.²¹ Moreover, contrary conclusions should not be drawn from a lack of response to oral administration of moderate doses of vitamin A. In our experience and in agreement with Getz, Hildebrand and Finn,²² prolonged and intensive treatment with large oral doses may be required to improve the powers of dark adaptation, and, according to Edmund and Clemmesen³¹ and the others cited by them, oral administration of vitamin A may be ineffective in cases which may respond satisfactorily to intramuscular injections. We believe, therefore, that a not inconsiderable though possibly a not yet precisely determined percentage of the population shows evidence of a mild vitamin A deficiency by impaired dark adaptation on photometric test.

The conclusions drawn from dietary surveys and from studies of impaired dark adaptation are further

supported by the results obtained by Moore⁴⁸ in England, Wolff⁴⁹ in the Netherlands and other investigators⁵⁰ elsewhere from assaying human livers obtained at necropsy for their stores of vitamin A. Here too, even in supposedly normal individuals meeting an accidental death, has been found a very wide spread from low values per gram of fresh liver of zero and 10 international units of vitamin A to high values of about 1,500 units, and the medians of 130 units in children of from 4 months to 14 years and of 220 units in persons from 15 to 59 years, have been taken by Moore as "typical" values of healthy individuals. Since Moore and others have established that a very large proportion, possibly 95 per cent, of all vitamin A of man and animals is stored in the liver, apparently a portion of the population has practically no reserves of this vitamin. Furthermore, the fact that the apparently healthy individuals in the lowest range of vitamin A content had an amount in their livers similar quantitatively to that reported by various investigators⁵¹ in the livers of experimental vitamin A deficient animals showing symptoms of night blindness corroborates, we believe, the evidence of dietary surveys and dark adaptation studies, which likewise suggest that at least the milder degrees of vitamin A deficiency are not rare.

SUMMARY

1. Nine children, almost all of families on relief, had the cutaneous manifestations of vitamin A deficiency.
2. Our diagnosis has been confirmed by photometric studies.
3. Improvement in visual tests has in some children been immediate with single adequately large doses of vitamin A but in others has required prolonged intensive therapy.
4. Maximal improvement of the skin has been attained with a daily dose of from 100,000 to 300,000 international units of vitamin A in from two to four months.
5. The typical follicular papules described by Frazier and Hu and others are not an infrequent cutaneous manifestation of vitamin A deficiency during childhood.
6. So far our investigations indicate that keratosis pilaris, lichen pilaris, lichen spinulosus, ichthyosis follicularis and other synonyms are merely descriptive terms for the cutaneous manifestations of vitamin A deficiency.

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THE DIAGNOSIS AND SURGICAL MANAGEMENT OF STRANGU- LATED FEMORAL HERNIA

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A high mortality attends strangulated femoral hernia. In 1900 Gibson¹ found it to be 47 per cent. Thirty years later Counsellor and Cox,² of the Mayo Clinic, stated that there had been only a slight reduction of the death rate despite the advances which had been made in the field of intestinal obstruction. In 1932 McIver³ noted a mortality of 18 per cent when operation was performed early and of 50 per cent when operation was delayed. Homans,⁴ Christopher⁵ and Watson⁶ all emphasize that the mortality is higher in strangulated femoral than in strangulated inguinal hernia. The present communication considers the causes of the high mortality and outlines measures of value in the management of this condition.

Three principal factors contribute to the high mortality of strangulated femoral hernia: delayed treatment, the old age of many of the patients, and improper surgical management. The importance of delayed treatment has been emphasized by Gibson,¹ Alexander,⁷

TABLE 1.—Mortality in Femoral Hernia in Relation to Vascular Change in the Intestine

Group	Number of Operations	Deaths	Mortality, per Cent
1. Uncomplicated by obstruction or gangrene of the intestine.....	160	0	0
2. Complicated by intestinal obstruction; bowel viable.....	31	0	0
3. Complicated by intestinal obstruction and gangrene.....	20	10	50

Group 1 includes cases in which only omentum was found strangulated or in which the bowel was simple incarcerated, as well as all elective operations for femoral hernia. In group 2 intestinal obstruction was present, and there were varying degrees of impairment of the vascular system, but gangrene had not developed. Group 3 includes the cases in which gangrene had developed by the time operation was performed.

McIver³ and others. It is evident in the figures of the Peter Bent Brigham Hospital (table 1). An important cause of delayed treatment is erroneous diagnosis. During a twenty year period (January 1917 to January 1937) the correct diagnosis was established prior to the admission of the patient to this hospital in only twenty-nine of fifty-one consecutive cases of strangulated femoral hernia. Moreover, because of errors in diagnosis, surgical intervention was delayed for periods of from one to eight days in 70 per cent of the fatal cases.

The circumstances which led to erroneous diagnosis merit emphasis. In many instances both patient and physician were unaware of the presence of a hernia. In others a hernia of long standing was dismissed as a possible cause of the symptoms because there was no local tenderness or pain in the groin. The proportion

of cases in which no complaint of pain or tenderness in the hernia was recorded is remarkable. Five patients complained only of intermittent, dull, aching pain in the epigastrium. Twenty-two patients noted abdominal pain more or less generalized but without radiation to or localization in the groin. Only twenty-four, less than half of the entire group, complained of pain in the hernia. Exquisite tenderness could be elicited by palpation of the hernia in only nineteen cases. In ten the hernia was slightly tender and in twenty-two it was not tender. A third factor which led to erroneous diagnosis was that the usual signs and symptoms of intestinal obstruction developed slowly in approximately one third of the cases either because the lower ileum was obstructed or because only a part of the circumference of the bowel was caught in the constricting ring (Richter's hernia). These various factors led to such diagnoses as "gastrointestinal upset" or "possible large bowel malignancy." The following case is illustrative:

REPORT OF CASE

An unmarried woman aged 78 entered this hospital complaining of abdominal pain and vomiting. Except for constipation, she had enjoyed excellent health until two months prior to admission. During this period she noticed increasing constipation and recurring attacks of mild midabdominal cramps. For three days before admission the pains were more severe and were accompanied by anorexia, nausea and vomiting. For seven days there had been no normal bowel movements, but daily enemas produced small amounts of fecal material. The patient had lost 10 pounds (4,536 Gm.) during the month prior to admission.

The patient, who was thin, was in no great distress. The heart was enlarged to percussion and a loud systolic murmur could be heard over the precordium. The abdomen was moderately distended and tympanitic but not tender. No abnormal masses were palpable. A large, hard nodular mass could be felt protruding into the anterior wall of the rectum. Pelvic examination was impossible because of a contracted senile introitus.

The admitting diagnosis was intestinal obstruction due to cancer of the rectum. This impression was confirmed by a junior member of the surgical staff. However, a senior member of the surgical staff noted that the rectal mass seemed to be covered by intact mucosa and that there was no blood on the examining finger. Also a small nodule was noted in the right groin. Although slightly tender to palpation, it had not been noticed before either by the patient or by previous examiners. A tentative diagnosis of strangulated femoral hernia was made. Further confirmation of this impression was obtained by a plain roentgenogram of the abdomen, which showed dilated loops of small intestine and a calcified mass, probably a fibroid, in the pelvis.

The patient was operated on through an inguinal incision, and a loop of small intestine was found strangulated in a small right femoral hernia. After release of the constricting ring the intestine gradually regained its normal color, and a resection was not thought necessary. The convalescence was uneventful.

As this report demonstrates, the diagnosis of a strangulated femoral hernia can usually be established clinically if it is given due consideration. Error arises from not thinking of the condition because of the vague character of the abdominal pain or because of the absence of local pain or tenderness in the groin. This is demonstrated by the fact that, although in twenty-two instances the condition was incorrectly diagnosed prior to the admission of the patient to the hospital, it was overlooked on only four occasions by senior members of the surgical staff. It should be axiomatic, therefore, that whenever a patient complains of vague gastrointestinal symptoms, particularly abdominal pain and vomiting, the possibility of a strangulated femoral

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hernia must be considered. Attention to this simple rule will prevent many errors. Moreover, the fact that a hernia is not tender to palpation does not exclude it as the cause of the symptoms. Often a physical examination in experienced hands is sufficient to establish the diagnosis, but if doubt exists a plain roentgenogram of the abdomen may be helpful by revealing evidence of obstruction of the small intestine. Occasionally the differential diagnosis between a strangulated femoral hernia and a tumor of the large bowel may be so difficult as to warrant an x-ray examination of the colon by means of a barium sulfate enema. This was found necessary in three of the fifty-one cases in this series.

TABLE 2.—Mortality in Strangulated Femoral Hernia in Relation to Age of Patients and Vascular Change in the Bowel

Age of Patient	Condition	No. of Cases	Deaths	Per Cent
40-70	Intestinal obstruction and gangrene...	11	4	36.3
70-90	Intestinal obstruction and gangrene...	9	6	66.7
40-70	Intestinal obstruction; bowel viable...	21	0	0
70-90	Intestinal obstruction; bowel viable...	10	0	0

The old age of many of the patients has been cited as an important factor in the high mortality.² The present study indicates that age assumes its chief importance when treatment has been delayed and gangrene of the bowel has developed (table 2). Under these circumstances the mortality in patients over 70 years of age is much higher than in the younger age groups. However, early diagnosis and proper surgical management can do much to offset the influence of age. In this series there were nineteen patients over 70 years of age. As shown in table 2, the mortality was 66⅔ per cent in nine cases in which gangrene of the bowel had developed. It is significant, therefore, that there were no deaths among ten patients, five of whom were over 80 years of age, when operation was performed before the

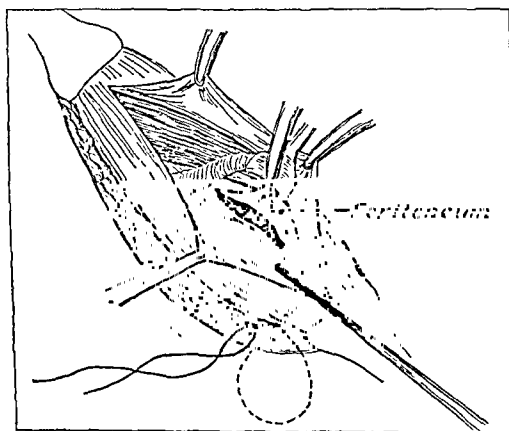


Fig. 1.—Inguinal operation for strangulated femoral hernia. The peritoneal cavity has been opened and a silk thread is being passed through the femoral canal to be used as a whipsaw to divide the free edge of Gimbernat's ligament.⁸

development of vascular changes of sufficient degree to necessitate resection of the bowel. In other words, if the diagnosis is established early the operation for strangulated hernia can be performed with a remarkably low mortality even in the aged.

SURGICAL MANAGEMENT

Certain aspects of the surgical management of these cases merit consideration. Inadequate preparation, prolonged inhalation anesthesia, poor exposure and mis-

directed attempts to preserve the integrity of the inguinal ligament contribute to the high mortality. Operation should not be performed until distention has been reduced and lost fluids have been replaced. A local injection of the peripheral nerves with procaine hydrochloride or metycaine provides the most satisfactory anesthesia. Extensive local infiltration of the field should be avoided because of the danger of spreading

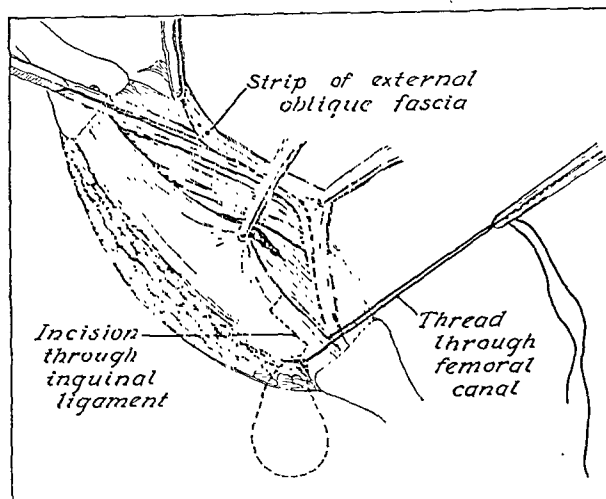


Fig. 2.—Inguinal operation for strangulated femoral hernia. There should be no hesitation in dividing the inguinal ligament, but an incision through it should be staggered, as shown. This permits the fascial edges to be reunited, and a strip of fascia taken from the upper edge of the external oblique serves as an excellent reinforcement.

infection if the sac has become gangrenous. The inguinal transperitoneal approach should always be used. The inadequacy of a femoral incision undoubtedly was a contributory factor in the death of one patient in this series. The inguinal approach gives the best exposure of the sac and its contents; an abnormal sac or obturator artery is more easily recognized through this incision, and if resection of the intestine is necessary it can be performed with an adequate exposure and without traction on the mesentery.

In experienced hands the inguinal operation is neither difficult nor time consuming. It is not shocking and is well tolerated even by the aged. The technical details of this procedure are well known,⁸ but one or two points deserve consideration. It is of great importance to open the peritoneal cavity (fig. 1) before handling the sac because a partial enterocoele (Richter's hernia) may be reduced during manipulation and a necrotic segment of bowel be overlooked. If bowel is found in the hernia an attempt should be made to free the sac by gentle traction and by incising Gimbernat's ligament. If Gimbernat's ligament is difficult to expose, Ware's⁹ maneuver of passing a silk thread on a blunt needle through the femoral canal and then gently whipsawing the thread against the free edge of the ligament may be worthy of trial (fig. 1). If this is not sufficient to free the hernia—and in my experience it usually is not—the inguinal ligament must be partially or completely divided. Persistent attempts to free a tense gangrenous sac by traction needlessly prolong the operation and tend to spread infection by excessive manipulation, if

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not rupture of the sac. However, if the inguinal ligament is cut straight across, the fascial edges may retract so far that it is difficult or impossible to reunite them and the key to a successful repair of the hernia is lost. The incision through the ligament, therefore, should be staggered or diagonal (fig. 2). After the hernial sac has been dealt with the ligament can then be reunited. A flap of fascia taken from the upper edge of the external oblique serves as an excellent reinforcement (fig. 2). As in a McArthur¹⁰ repair of an inguinal hernia, the medial end of this strip of fascia is left attached and the free end is passed under the cord or round ligament and sutured to the reunited inguinal ligament with interrupted stitches of fine silk. This reconstructed ligament is a sound structure which can be utilized in the ordinary repair.

The inguinal ligament should not be needlessly sacrificed but there should be no hesitation in cutting it if the sac cannot be easily delivered. No originality is claimed for this method of dividing and reconstructing the inguinal ligament. It has been used on six occasions over a period of several years at the Peter Bent Brigham Hospital. In one case death occurred one year after operation from another cause and at postmortem examination it was possible to demonstrate a satisfactory inguinal ligament and a sound closure of the femoral canal. The other patients have been followed for periods of from three to five years since operation. No recurrences of the hernia have been noted.

The postoperative care of these patients should follow the established lines for patients with intestinal obstruction. However, the aged or feeble patient should be up and about in a wheelchair as early as the first postoperative day. This will do much to maintain tonus and may prevent pulmonary complications or thrombophlebitis. There is practically no danger of evisceration because the peritoneal incision in these cases is a small one. The likelihood of a recurrence of the hernia is of small consequence in comparison with the life of the patient.

SUMMARY

A study of fifty-one cases of strangulated femoral hernia indicates that a principal factor in the mortality is erroneous diagnosis. A contributory cause is the old age of many of the patients. Early diagnosis and proper surgical management assure a favorable prognosis even in the aged.

10. McArthur, L. L.: Autoplastic Sutures in Hernia and Other Diastases: Final Report, *J. A. M. A.* **43**: 1039 (Oct. 8) 1904.

Vision During Flight.—Vision is absolutely necessary for both aerial equilibration and orientation. If vision is eliminated during flight, all the other organs of equilibration have been found inadequate and the pilot becomes hopelessly confused. However, even vision is not as accurate in the air as it is on the ground. It is a common observation that the greater the distance between the airplane and the earth the slower it seems to move. This illusion is important in the training of pilots in that it creates a false sense of the degree of bank required in a turn to keep the airplane from side-slipping. It has also been observed that the greater the distance between the airplane and the earth the less the accuracy of visual depth perception and spatial orientation. Thus, only wide degrees of tilt can be recognized and it is only by the aid of instruments that an exact course parallel to the earth's surface can be flown with any degree of certainty. From this it is evident that even aerial vision gives us only an approximate idea of equilibration and orientation except when flying close to the ground.—Armstrong, Harry G.: *Principles and Practice of Aviation Medicine*, Baltimore, Williams & Wilkins Company, 1939.

DILANTIN SODIUM THERAPY IN EPILEPSY

REPORT OF STUDY IN PROGRESS

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Dilantin sodium was introduced by Merritt and Putnam¹ as a treatment for convulsant disorders, after experimental studies had shown its efficacy as an anti-convulsant.² In their first clinical contribution they reported favorable results in 200 cases, in the majority of which there were frequent convulsive seizures. They conclude their article with the statement "Sodium diphenyl hydantoinate is a valuable addition to the physician's armamentarium in the battle against epilepsy. Its use should be restricted for the present to that group of patients who do not respond to the less toxic forms of therapy previously in common use."

Through the courtesy of Dr. J. D. Ralston, of Parke, Davis & Co., a liberal supply of this medicament was made available for a clinical trial. In May 1938 treatment was started on several private patients and then extended to the members of an outpatient epileptic clinic at Lakeside Hospital. Patients were selected for a trial of dilantin sodium therapy largely on the basis of chronic epilepsy with frequent attacks.

We have treated some thirty patients during this period of eleven months. At first my associates³ and I gave dilantin sodium in doses of from 0.1 to 0.2 Gm. three times a day, replacing the previous medication fairly promptly. As the result of additional experience, however, it was found more practical to make the substitution more gradually and to introduce the drug slowly.

RESULTS OF DILANTIN SODIUM THERAPY

The accompanying table lists the results of dilantin sodium therapy in a group of twenty-eight cases composed of those seen in private practice and of the epileptic clinic. Two pediatric cases studied by Dr. Schneider are not included.

The table summarizes the data in the twenty-eight cases from various standpoints: After the name, the age and the type and duration of epilepsy comes the column listing the anticonvulsant value of the drug. The items described as "marked benefit" represent total freedom of attacks, in two cases, to decided reduction in grand mal convulsions. The term "doubtful" is applied to those patients whose attacks were not materially altered as compared with the status during the previous sedative medication.

Next is a column listing the unfavorable actions of dilantin sodium under several subdivisions: blood, gums and neuropsychiatric manifestations. The details will be discussed later.

The last column is a general estimate of the clinical value of the new drug when the unfavorable reactions which it may have caused are deducted from its efficacy.

From the Neuropsychiatric Clinic, Lakeside Hospital, and the School of Medicine, Western Reserve University.

1. Merritt, H. H., and Putnam, T. J.: *Sodium Diphenyl Hydantoinate in the Treatment of Convulsive Disorders*, *J. A. M. A.* **111**: 1023 (Sept. 17) 1938.

2. Merritt, H. H., Putnam, T. J., and Schwab, D. H.: *A New Series of Anticonvulsant Drugs Tested by Experiments on Animals*, *Arch. Neurol. & Psychiat.* **39**: 1003 (May) 1938. Putnam, T. J., and Merritt, H. H.: *Experimental Determination of the Anticonvulsant Properties of Some Phenyl Derivatives*, *Science* **85**: 525 (May 29) 1937.

3. Dr. H. J. Kumin, of the Epileptic Clinic, and Dr. W. F. Schreiber, of the Pediatric Department, aided in this study.

The most significant fact revealed by the trial of dilantin sodium is its remarkable anticonvulsant value. Its therapeutic benefit has been excellent in at least ten of the twenty-eight cases listed in the table. This improvement is noteworthy because it was achieved in cases of severe involvement. The patients who became attack free or whose seizures were greatly reduced had been receiving treatment over a period of years with little or no benefit. In this group the clinical value was estimated as excellent because there was not only reduction of attacks but often an increased confidence. Some had side actions of a mild degree.

An additional group had some benefit, as indicated by a reduction in seizures, but the discomfort caused by the drug practically offset its therapeutic value. These results are considered "doubtful."

few patients had itching and a faint cutaneous rash, accompanied by eosinophilia; others showed swelling of the gums. The more common complaints involved the nervous system. These complaints included (a) neurologic symptoms, (b) vegetative and nervous reactions and (c) psychic difficulties.

(a) *Neurologic Symptoms.*—The neurologic difficulties consisted of tremors and ataxia. Common complaints were "I am trembly; my fingers are clumsy; I have a difficult time when I eat; I have to grasp my knife and fork more firmly or I will drop them; I am unable to sew; I feel unsteady and I have to watch my step when I walk up and down the stairs. Sometimes I have the feeling of being on a teeter-totter."

The tremors which are visible in the extended hands are not attended by loss of muscle tone, weakness or

Summary of the Clinical Value of Dilantin Sodium in Twenty-Eight Cases of Epilepsy

No.	Patient	Age, Yr.	Type	Age at Onset, Yr.	Anticonvulsant Value	Side Actions			Estimate of Efficiency
						Neuro-psychiatric	Gums	Blood	
1	B. C.	35	Idiopathic	25	Marked	0	Slight	0	Excellent
2	E. M. A.	14	Idiopathic	3	Marked	0	0	0	Excellent
3	M. S.	31	Idiopathic	18	Marked	0	0	Temperature, eosinophilia	Excellent
4	S. N.	29	Idiopathic	19	Marked	0	Slight	0	Excellent
5	H. P.	28	Idiopathic	15	Marked	0	0	0	Excellent
6	M. L.	50	Idiopathic	20	Marked	Slight	0	0	Excellent
7	L. E. B.	22	Idiopathic	10	Marked	0	0	0	Excellent
8	B. T.	15	Idiopathic	5	Marked	Slight	0	0	Excellent
9	S. S.	36	Idiopathic	15	Marked	Temperature marked	+	0	Excellent
10	Lo. Br.	40	Idiopathic	30	Marked	Temperature +	0	0	Excellent
11	S. M.	25	Idiopathic	16	Moderate	Mild	Slight	0	Moderate
12	M. B.	39	Idiopathic	26	Moderate	0	0	Temperature, rash and eosinophilia	Moderate
13	E. C.	38	Idiopathic	5	Moderate	Slight	0	0	Fair
14	M. F.	44	Idiopathic	28	Slight	0	0	Low white cell count	Fair
15	S. B. O.	29	Idiopathic	21	Doubtful	Tremors	0	0	Doubtful
16	R. B.	27	Idiopathic	14	Mild	0	0	0	Fair
17	M. R.	25	Idiopathic	12	Mild	0	Slight	0	Doubtful
18	J. C.	19	Organic	7	Mild	0	0	0	Doubtful
19	J. T.	25	Organic	5	None	Mild	0	0	None
20	To. Mu.	38	Idiopathic	10	Mild	Marked	0	0	Harmful (?)
21	T. M.	46	Idiopathic	15	Moderate	Moderate	0	0	Doubtful
22	P. M.	55	Idiopathic	35	Moderate	Paranoid	0	0	Harmful
23	G. O.	28	Idiopathic	15	Slight	Tremors	0	0	Slight
24	M. C.	24	Idiopathic	16	Slight	Moderate	0	0	Treatment discontinued
25	E. D. I.	42	Idiopathic	15	Questionable	?	?	?	Treatment discontinued
26	M. D.	21	Idiopathic	20	Moderate	Moderate	0	0	Treatment discontinued
27	J. S.	20	Organic	5	None	Unpleasant reaction	0	0	Treatment discontinued
28	P. D.	20	Idiopathic	5	Moderate	?	?	?	Treatment discontinued

Toward the end of the table are listed five patients in whom the efficacy of the drug could not be evaluated properly. They discontinued its use early. In part, as will be explained later, this was due to the abrupt change from phenobarbital to dilantin sodium, so that the patients experienced striking discomfort and perhaps little or no benefit. Likewise, this group of patients included persons with chronic epilepsy who had previously not responded to high fat diet, dehydration, sodium bromide and phenobarbital. In several instances one may interpret the action of dilantin sodium as being harmful: in two of the cases there developed definite irritability and suspiciousness, which in one instance reached a paranoid state. The unfavorable side actions of the drug will be next considered.

SIDE ACTIONS

Though the anticonvulsant value of dilantin sodium was striking, its unpleasant side actions have also been prominent. The majority of patients were disturbed by unpleasant and sometimes distressing symptoms during the first weeks after taking the medicament. A

change in reflexes. The combination of tremor of the hands and subjective unsteadiness in walking impresses me as representing a cerebellar dysfunction caused by the drug. It is usually transitory, and the majority of patients soon become free of this handicap.

Less common complaints are blurring of vision, loss of taste and dysesthesias in the mouth.

(b) *Nervous Complaints.*—Many patients say "I feel jittery, uncomfortable, restless. I am conscious of my heart beating." Such patients manifest the consciousness of different parts of the body in a manner resembling the subjective sensations so common in neuroses.

(c) *Psychic Complaints.*—These include insomnia and irritability and, in several cases, suspiciousness and quarrelsomeness.

Three of the patients had psychic reactions which resembled a paranoid state. Though it was not an easy matter in the face of the peculiarities fairly common among epileptic persons to diagnose this condition, its appearance after administration of dilantin sodium and the fairly common pattern in several instances, as well

as an improvement when this treatment was discontinued, led to the conclusion that the drug may disturb judgment and poise. For example, patient 21 became embittered about his parents' neglect. From week to week he was more fault finding and quarrelsome. When medication was discontinued, he regained his normal composure. Patient 22, who had been placed in the Lakeside Hospital for study, later accused the house physicians of banging his head during the night and of torturing him with long wires which they were inserting into his body. These accusations represent a projection mechanism to explain headache and his interpretation of blood tests. When dilantin sodium was discontinued, he improved. Medication was resumed once more and the symptoms reappeared, to subside again when the drug was withdrawn.

These neuropsychiatric side actions are usually of short duration and tend to subside. Some patients do not have any symptoms at all; others are troubled during the first few weeks and develop a tolerance for them. Where they persist, it is advisable to discontinue the drug—a step which the patients usually take of their own accord.

Other side reactions studied include the following manifestations:

(a) *Skin*.—In two cases slight dermatitis developed, a complication which Merritt and Putnam considered most troublesome. In both instances a temporary reduction in the dosage brought about a relief of the cutaneous symptoms. Later the medication was resumed without the reappearance of this complication.

(b) *Gums*.—In the fall of 1938 my attention was called to this complication by Dr. O. P. Kimball, who was the first to observe changes in the gums during treatment with dilantin sodium. At this time he presented a patient showing marked gum changes, a condition which he has recently reported.⁴

Among the twenty-eight patients in our group, there were seven who had noticeable changes in their lower gums. This consisted of a swelling at the root margin of the teeth which was puffy and whitish and, in some instances, showed increased vascularity. Though puffy, the gums were not tender or bleeding. With the exception of one, the patients were entirely unaware of this change. Patient 21 complained of an uncomfortable sensation in the mouth, "as though the teeth were loose in their sockets."

When this gum swelling was observed over a period of weeks or months there was no remarkable change. At certain times it appears to be less marked than at others. What the exact nature of this swelling is will be determined by later studies.

Kimball found that patients who showed marked hyperplasia of the gums showed a definite deficiency of vitamin C. However, studies made by the laboratories of Parke, Davis & Co.⁵ on the vitamin C content of the blood of rats receiving large doses of dilantin sodium showed no decrease in this vitamin.

(c) *Gastrointestinal*.—Anorexia, gastric distress and loss of weight occurred in several cases.

ADDITIONAL OBSERVATIONS

1. *Urinalysis*.—Specimens examined showed no albumin or sugar and no white or red blood cells.

2. *Blood Studies*.—During the earlier weeks of medication several of the patients have shown eosinophilia, particularly in connection with the appearance of dermatitis. However, the subsequent studies did not reveal a significant change in red cell, white cell or hemoglobin values or in the differential count. This also was the opinion expressed by Drs. Merritt and Putnam.

3. *Mental Tests*.—Mrs. Barnes has made careful psychologic examinations, particularly with the Babcock test, on the dispensary patients receiving dilantin sodium. The results have been compared with the data accumulated in the course of previous years.⁶ The tests to date show no unfavorable influence on intelligence or learning ability as a result of this new medication. The intelligence ratings have been at least as good as, if not slightly better than, tests made in previous years. These measurements corroborate the clinical impression of undisturbed intelligence when emotional changes have not upset the poise of the patient.

REPORT OF CASES

A. *Successful Result* (case 5).—H. P., a woman aged 30, had suffered from epileptic attacks since the age of 15. There was a history of a head injury at 13, on the basis of which an encephalogram was made. This procedure, as well as a neurologic study, showed no abnormality. The patient continued to suffer frequent attacks from adolescence on. A careful record kept by the family indicated an average of at least four convulsive seizures a month and more numerous petit mal attacks. Early in 1938 the patient was placed on phenobarbital, with a dose of one-half grain (0.03 Gm.) three times a day. Under this regimen she continued to have grand mal attacks and frequent "lapses." As a result of this illness she spent quite a bit of time in bed, was almost constantly watched and was never permitted to leave the house alone.

Treatment with dilantin sodium was started in May 1938, replacing the phenobarbital. During the first week she had one convulsion. However, she has continued with dilantin sodium up to the present.

In June she complained of feeling trembly and unsteady, with difficulty in using knife and fork, and stated that objects often seemed to be moving. Examination showed a tremor of the extended hands and some finger to nose ataxia. Though she complained subjectively of unsteadiness in walking there was no demonstrable gait disorder. In June there was a slight cutaneous lesion, more acneiform than urticarial. During June and July there were no attacks and the tremors were less disturbing. From June to the present, a period of ten months, the patient has been entirely free from attacks. The side reactions are minimal. There have been no abnormal changes in the urine or blood.

Mentally, this patient is tremendously improved. She has become more confident and more active. The personality change, associated with a feeling of well-being and the freedom from fear of attacks, has been remarkable.

B. *Moderately Successful Result* (case 7).—L. B., a man aged 24, was a student who had been troubled by idiopathic epilepsy since the age of 8. Thorough studies in the hospital, including an encephalogram, yielded no significant information. He had been given phenobarbital, one-half grain three times a day, despite which he continued to have three or four attacks every month. The addition of sodium bromide did not materially alter the number of seizures. Administration of dilantin sodium was started at the end of May, with a dosage of three capsules daily. The patient had practically no discomfort from the drug. He had one major attack in June and another in August. He has averaged less than one attack a month up to the present.

4. Kimball, O. P.: Treatment of Epilepsy, J. A. M. A. 112:1244 (April 1) 1939.

5. Unpublished data from the laboratories of Parke, Davis & Co.

6. Barnes, Margaret R., and Fetterman, Joseph L.: The Mentality of Dispensary Epileptic Patients, Arch. Neurol. & Psychiat. 40:53 (Nov) 1938.

The examination of the urine showed no sugar or albumin; the blood counts were unchanged.

C. Unfavorable Result (case 21).—T. M., a man in the early thirties, had been troubled by attacks of both grand and petit mal for about a decade. Previous therapy, including bromides and phenobarbital, did not alter the course of his illness. Treatment with dilantin sodium was begun in June and continued until December. During the summer he complained a great deal about tremors, palpitation and sleeplessness. He became hypercritical, finding fault with everything at home, reprimanding his parents and making efforts to change things. His irritability was so marked that the family complained that it was almost impossible to live with him. The dosage was stepped up from three capsules daily to four or five because the attacks continued. When the marked irritability developed, medication was reduced. Finally the patient himself discontinued all treatment. He developed more poise and was happier and more friendly.

COMPARISON BETWEEN THE ACTIONS OF DILANTIN SODIUM AND PHENOBARBITAL

On the basis of previous experience, phenobarbital was the remedy of choice, with adjustments of dosage to the needs of each patient. The experience up to the present shows that as an anticonvulsant dilantin sodium is superior to phenobarbital alone and to the combination of phenobarbital with sodium bromide. Our clinical results confirm the favorable experience of Drs. Merritt and Putnam, both experimentally and clinically. The number of patients tremendously relieved by dilantin sodium who had shown little or no improvement with phenobarbital is noteworthy. One must remember also that these patients were selected because of the severity of the epilepsy.

Though dilantin sodium has proved superior to phenobarbital with many patients, its time or site of action must be different from that of phenobarbital. In several instances, when phenobarbital was rapidly displaced by dilantin sodium the patient had one or two seizures. Yet as the dilantin was continued there was a remarkable freedom from attacks. This would indicate that either dilantin sodium acts at a different site in the nervous system or is much slower in building up a defense against attacks. The second theory was the opinion of Drs. Merritt and Putnam, who pointed out that a definite accumulation of dilantin sodium is necessary before its therapeutic effect is realized. As a rule, phenobarbital exhibits its anticonvulsant properties more promptly, although the protective value may decrease in the course of time. Patient 6 had gained considerable freedom from attacks under treatment with dilantin sodium. She decided that she was well and discontinued this drug. A series of seizures then developed. In this respect the sudden cessation of dilantin sodium acts as does the sudden withdrawal of phenobarbital—there is a tendency for a shower of attacks. The resumption of the drug did not check the seizures until several days had elapsed.

A more fundamental difference between the two medicaments is the contrast between the usual sedative effect of phenobarbital and the frequently disquieting action of dilantin sodium. For most patients phenobarbital is soothing and relaxing and may become depressing. Dilantin sodium certainly does not make patients dull or drowsy. Rather, it tends to produce alertness and wakefulness. Several of the patients have commented on their keenness and ability to do better work when taking the drug; in other instances this alertness led to irritability and sleeplessness. One may infer from this difference that the anticonvulsant property of phenobarbital is a part of its general quieting

effect on the central nervous system, whereas the anticonvulsant property of dilantin sodium is a more specific characteristic.

In a clinical way, one may utilize this difference between the two drugs. For patients who are drowsy with phenobarbital, dilantin sodium certainly should be tried. For those having occasional and infrequent attacks, the mildness of phenobarbital is preferable to the discomforts that may arise from dilantin sodium. On the other hand, for those who are not benefited by sedative medication, particularly if they have been suffering from frequent attacks, dilantin sodium is worthy of a trial. For the probability of its anticonvulsant value and the fact that the disturbing side actions usually grow milder in the course of time may justify its use. But it is questionable whether a patient whose attacks are few and far between would exchange the peaceful sedative effect of phenobarbital for the ruffled, stormy action of dilantin sodium.

In some instances a combination of the two drugs has been used. As yet I have not observed any profound synergistic action from such medication.

PRACTICAL POINTS IN TREATMENT

To avoid untoward symptoms from the sudden withdrawal of phenobarbital and at the same time to lessen any probable side actions from dilantin sodium, it is prudent to administer this new drug in gradually increasing doses. If a patient has been receiving, let us say, three tablets of phenobarbital daily, it is a good rule to replace one tablet by one capsule of dilantin sodium daily during the first week and then, during the second week, to replace two of the phenobarbital doses by two capsules of the other drug. During the third week, if there are no attacks, one may replace the phenobarbital entirely, but it is safer to continue with at least one dose of phenobarbital plus three capsules of dilantin sodium. Should attacks continue and no complex side actions develop, the dose of dilantin may be increased to four or five capsules daily for an adult.

This scheme depends on the gradual reduction of phenobarbital over a period of from three to four or five weeks, with the simultaneous replacement by dilantin sodium in gradually increasing amounts.

If a dermatitis or marked neuropsychiatric symptoms appear, it is best to reduce the dose of dilantin sodium. If the medication is reduced, it is my custom to substitute an equivalent amount of phenobarbital (1½ grains [0.1 Gm.] of phenobarbital for 1½ grains of dilantin sodium).

Patients should not be allowed to take dilantin sodium indiscriminately. The drug should be prescribed under the careful supervision of the physician. It is important to guide the patient not only in the doses which he takes but even in the matter of cessation, for sudden withdrawal of dilantin sodium, like the cessation of phenobarbital, may precipitate a shower of attacks.

COMMENT

The clinical observations of the effect of dilantin sodium on a group of chronic epileptic patients indicate that the drug possesses high therapeutic efficacy as an anticonvulsant. However, it also exhibits marked side actions. The complications are of various kinds; they are chiefly neuropsychiatric but may also include temporary involvement of the skin and a peculiar swelling of the gums. Like other drugs (sulfanilamide) which

possess both a high value and the possibility of major complications, dilantin sodium should be used if milder medication fails and then only under careful supervision. Under such control it may prove to be of inestimable value in reducing the number of attacks and allowing the patient to be alert and active.

CONCLUSION

The clinical trial of dilantin sodium in the treatment of twenty-eight epileptic patients indicates a high degree of therapeutic value. It has demonstrated its anticonvulsant qualities even when phenobarbital, alone or in combination with bromides, has failed. Dilantin sodium has distinct disquieting side actions which may become major complications. Further work will be done to determine its value over a longer period and to learn the mildness or severity of the complications after a longer interval has elapsed.

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THE USE OF 2-METHYL-1,4-NAPHTHO- QUINONE (A SYNTHETIC VITA- MIN K SUBSTITUTE)

IN THE TREATMENT OF PROTHROMBIN
DEFICIENCY IN PATIENTS

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The isolation of vitamin K in pure form has led to the discovery that several simpler naphthoquinones share the antihemorrhagic properties of vitamin K. The most potent of the synthetic preparations so far assayed is 2-methyl-1,4-naphthoquinone. A clinical trial of this material on ten patients with prothrombin deficiency seems to confirm the high potency demonstrated for this compound by chick assays. The results are given in the accompanying table.

Three of the patients in whom a satisfactory response was obtained had failed to respond satisfactorily to various forms of vitamin K. Seven of the patients responded to an oral dose of 1 mg. of the 2-methyl-1,4-naphthoquinone a day and in six cases the prothrombin time returned to normal within twenty-four hours or less after the initial dose had been given. In two cases (5 and 6) the prothrombin time did not return to normal although the dose was later increased. In case 5 the prothrombin time subsequently rose in spite of continued treatment. The patient was a baby aged 6 months, deeply jaundiced from birth. Autopsy subsequently showed stenosis of the bile ducts with marked damage of the liver. Patient 1 also required larger doses. Patient 8 received only 1 mg. and in thirteen hours his prothrombin time declined from forty seconds to twenty-four seconds. No further determinations were made, as the patient died a short time later from the primary disease.

The 2-methyl-1,4-naphthoquinone was supplied by the Squibb Institute for Medical Research through the courtesy of Dr. Stefan Ansbacher.

From the Harrison Department of Surgical Research, University of Pennsylvania School of Medicine, the Surgical Clinic of the Hospital of the University of Pennsylvania, and the Jewish Hospital of Philadelphia.

The patients studied were under the care of members of the staffs of the Hospital of the University of Pennsylvania and the Jewish Hospital of Philadelphia, to whom the authors are indebted for the privilege of this study.

All the patients received bile salts, either in the form of iron-bile salts (Lilly), from 0.6 to 2.0 Gm. a day, or of sodium deoxycholate (Riedel-De-Haen), from 0.015 to 0.40 Gm. a day.

COMMENT

The purification of vitamin K in crystalline form was accomplished by McKee, Binkley, MacCorquodale, Thayer and Doisy.¹ Two substances were obtained. The more potent, K₁, was derived from alfalfa and the less potent, K₂, was derived from fish meal. Studies of the chemical structure of these compounds indicated that they were substituted 1,4-naphthoquinones with some difference in the side chains. Since then other naphthoquinones have been shown to possess antihemorrhagic activity. Almquist and Klose² showed that phthiocol or 2-methyl-3-hydroxy-1,4-naphthoquinone had antihemorrhagic properties. This compound was first discovered by Anderson and Newman,³ in the tubercle bacillus and was subsequently synthesized by Newman, Crowder and Anderson.⁴

The availability of this compound led to its early use in practice. Smith, Ziffren, Owen and Hoffman⁵ reported success in treatment of prothrombin deficiency in one case and Butt, Snell and Osterberg⁶ recorded using it in ten cases at the Mayo Clinic. The dose employed was 100 mg. by mouth or from 25 to 50 mg. intravenously. The 50 mg. dose proved to be more satisfactory. Good responses were obtained, but the prothrombin time did not return to normal in every case.

According to chick assay, 2-allyl-1,4-naphthoquinone was found to be very active;⁷ 2,3-dimethyl-1,4-naphthoquinone was also found to be very active;⁸ 2-hydroxy-1,4-naphthoquinone is also active but less so than phthiocol.⁹

MacCorquodale, Binkley, Thayer and Doisy¹⁰ reported that they had assayed a variety of naphthoquinones and that only among the compounds of 1,4-naphthoquinone had substances with vitamin K activity been found. They believe that K₁ is 2-methyl-3-phytyl-1,4-naphthoquinone.

There is general agreement that 2-methyl-1,4-naphthoquinone is the most potent of the vitamin K substitutes so far assayed. This is clearly shown in the data of Ansbacher and Fernholz¹¹ and is also indicated by the reports of Thayer, Cheney, Binkley, MacCorquodale and Doisy¹² and of Almquist and Klose.⁹ The assays of these three laboratories do not, however, agree on the relative strengths of this compound to phthiocol and to K₁. Ansbacher and Fernholz¹¹ believe that the 2-methyl compound is several hundred times as potent as phthiocol and is practically as active as

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2. Almquist, H. J., and Klose, A. A.: *J. Am. Chem. Soc.* **61**: 1611, 1939.

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5. Smith, H. P.; Ziffren, S. E.; Owen, C. A., and Hoffman, G. R.: *Clinical and Experimental Studies on Vitamin K*, *J. A. M. A.* **115**: 143 (July 29) 1939.

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7. Fieser, L. F.; Bowen, D. M.; Campbell, W. P.; Fry, E. M., and Gates, M. D., Jr.: *J. Am. Chem. Soc.* **61**: 1926, 1939.

8. Fieser, L. F.; Bowen, D. M.; Campbell, W. P.; Fieser, M.; Fry, E. M.; Jones, R. N.; Riegel, B.; Schweitzer, C. E., and Smith, P. G.: *J. Am. Chem. Soc.* **61**: 1925, 1939.

9. Almquist, H. J., and Klose, A. A.: *J. Am. Chem. Soc.* **61**: 1923, 1939.

10. MacCorquodale, D. W.; Binkley, S. B.; Thayer, S. A., and Doisy, E. A.: *J. Am. Chem. Soc.* **61**: 1928, 1939.

11. Ansbacher, Stefan, and Fernholz, E.: *J. Am. Chem. Soc.* **61**: 1924, 1939.

12. Thayer, S. A.; Cheney, L. C.; Binkley, S. B.; MacCorquodale, D. W., and Doisy, E. A.: *J. Am. Chem. Soc.* **61**: 1932, 1939.

vitamin K itself. Thayer and his associates, while agreeing that it is the most active of the synthetic materials so far studied, state that it is only one hundredth as active as pure K. Almquist and Klose⁹ state that it is one tenth as active as their refined alfalfa extract.^{12a}

As the absolute amount of each of these substances needed for the formation of prothrombin is very small, it is probable that cost, ease of administration, uniformity of results and absence of toxic effects will ultimately determine which of them will be most generally used.

The pharmacology of 2-methyl-1,4-naphthoquinone has not been fully studied. Preliminary toxicologic studies indicate that doses 10,000 times the therapeutic dose may produce hemolytic anemia in animals.¹³ The largest dose that we have employed is 0.5 mg. per kilogram daily. No toxic manifestations have been observed that seemed to have any relation to the drug. One of the patients has received a total of 61 mg. over a period of one month.

*Results of the Treatment of Prothrombin Deficiency with
2-Methyl-1,4-Naphthoquinone*

Case	Diagnosis	Pro- thrombin Time Before Treat- ment, Sec.*	Treatment		Pro- thrombin Level After Treat- ment, Sec.*
			Amount per Day, Mg.	Num- ber of Days	
1	Carcinoma of pancreas.....	36	4†	1	23‡
2	Carcinoma of pancreas.....	28	1	1	20
3	Carcinoma of colon.....	31	1	1	22
4	Obstructive jaundice.....	36	1	1	23
5	Icterus gravis.....	45	1	3	31
6	Obstructive jaundice.....	36	1	1	24
7	Carcinoma of colon.....	32	4	1	21§
8	Obstructive jaundice complicating Hodgkin's disease.....	40	1	13 hours	24
9	Newborn infant with hemorrhagic tendency.....	38	1	1	20
10	Newborn infant with hemorrhagic tendency.....	125	1	1	24

* Prothrombin times were determined by the method of Quick (On the Various Properties of Thromboplastin [Aqueous Tissue Extracts], *Am. J. Physiol.* 114: 282 [Jan. 7] 1936). Normal controls ranged from nineteen to twenty-four seconds.

† One half of this amount was given by rectum as the patient was having a gastric hemorrhage with frequent emesis.

‡ Transfusion; gastric hemorrhage.

§ Transfusion.

CONCLUSIONS

Ten patients with demonstrated prothrombin deficiencies were treated with 2-methyl-1,4-naphthoquinone. All but one of these patients responded satisfactorily to doses of from 1 to 4 mg. a day orally.

In three cases hemorrhagic phenomena occurred before the first dose was given. In all these the hemorrhage was controlled.

2-Methyl-1,4-naphthoquinone appears to be the most potent agent for the treatment of prothrombin deficiency so far employed clinically.

No toxic effects were observed in this group of patients.

12a. Later reports (Thayer, S. A., and others: *J. Am. Chem. Soc.* 61: 2563, 1939. Tishler, M., and Sampson, W. L., *ibid.* 61: 2563, 1939. Almquist, H. J., and Klose, A. A.: *J. Biol. Chem.* 130: 787-789, 1939) have confirmed the statement of Ansbacher and Fernholz that the anti-hemorrhagic activity of 2-methyl-1,4-naphthoquinone is at least as great as that of vitamin K. One mg. of the drug may be dissolved in 10 cc. of physiologic solution of sodium chloride for intravenous administration. Three mg. during a period of forty hours reduced the prothrombin time in a case of hepatic cirrhosis from 35 seconds to a normal level of 22 seconds. The same dose intravenously was used successfully in an additional patient with obstructive jaundice with prothrombin deficiency.

13. Personal communication from Dr. W. L. Ruigh of the Squibb Institute for Medical Research.

GUMMA SIMULATING TUMOR OF THE CAUDA EQUINA

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Gumma simulating neoplasm of the spinal cord has always been a rarity hardly deserving consideration, yet most works dealing with the clinical and pathologic aspects of syphilis of the nervous system mention gummatous involvement of the cord and spinal meninges. In all likelihood the reason why the clinical aspects have received so little consideration is that gumma of these structures usually does not attain significant size, and also its effects may be overshadowed by the manifestations of myelitis and meningitis, which are apt to precede or accompany it.

The case presented here may not add anything significant to the recognized pathology of syphilis of the nervous system but it is an interesting reminder of the vagaries of the disease and there are few examples of its kind on record.

REPORT OF CASE

Symptoms and signs of a lesion of the cauda equina, progressive for one year before admission. Lumbar puncture showed xanthochromic fluid and evidence of a nearly complete block of the spinal canal. Spinal fluid and blood supposed to be negative for syphilis. At operation a gumma of the cauda equina was found and material was taken for a biopsy. Postoperative institution of antisyphilitic therapy. Two years' follow-up shows marked return of motor function, loss of pain, return of bladder function and normal spinal fluid.

History.—Bernard Y., aged 41, a Spanish born laborer, was admitted May 3, 1937, from St. Joseph's Hospital at Paterson, N. J. Except for a penile sore in 1917, which had been treated locally, he had had no remarkable sickness until he developed, in the spring of 1936, weakness in the right lower extremity and radiating pain from the right sacral region down the posterior thigh and calf. The degree of pain and weakness varied during the next year, but in March severe radiating pain developed in both lower extremities and over a period of several weeks progressed in these extremities to a point which made it impossible for him to support his weight. About the same time he developed urinary retention.

At the New Jersey Hospital, where he was admitted April 19, 1937, he was studied and the urinary retention treated with an indwelling catheter. It is reported that two lumbar punctures were performed and each time only 2 cc. of xanthochromic fluid could be obtained. A cisternal puncture, however, produced clear fluid and neither this fluid nor his blood were said to show a positive Wassermann reaction. He was transferred by ambulance to us with this information and a diagnosis of spinal cord tumor.

Examination.—He was of good muscular development and, as he lay in bed, was in only moderate discomfort from pain in his lower extremities. All head functions were normal. The chest and abdomen also were within normal limits.

The neurologic examination revealed nothing remarkable down to the lumbar segments. The right thigh and gluteal regions and the left calf were moderately atrophied. Motion of the right lower extremity was limited to weak rotation and extension at the hip; on the left, all motions were possible but very weakly performed. Muscle tone was slightly diminished and all reflexes were absent in the lower extremities but for a slight patellar response on the left. The cremasteric reflexes were absent but the abdominals were present. Sensation (fig. 1) was disturbed over the right thigh and gluteal areas and over the left saddle, gluteal, outer leg and foot areas.

On lumbar puncture in the third interspace, xanthochromic fluid was obtained. The initial pressure was 180 mm. of water

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and jugular compression produced a very slow rise and fall. The cell count of this fluid was 110 per cubic millimeter (85 per cent polymorphonuclear leukocytes) and the Pandy test was positive. Blood Wassermann and Kahn tests were negative. On the basis of this and the report of the negative Wassermann reaction found on examination of the cisternal fluid at the first hospital, the necessity of waiting for the Wassermann report on the spinal fluid was dismissed.

Iodized poppyseed oil 3 cc. was introduced through the lumbar puncture needle and its position observed by fluoroscopy. When the body was tilted head down, the oil indicated partial obstruction at the first lumbar interspace; when the body was tilted feet down, the oil failed, even after two hours, to fill the lower lumbar and sacral canal as it should normally (fig. 2, inset).

Operation and Result.—May 7 with the use of ether anesthesia laminectomy of the first, second and third lumbar vertebrae was performed and, after the opening of the dura, the conus medullaris and upper cauda equina were exposed. The roots of the cauda equina were slightly swollen and loosely stuck together by what appeared to be a low grade inflammatory

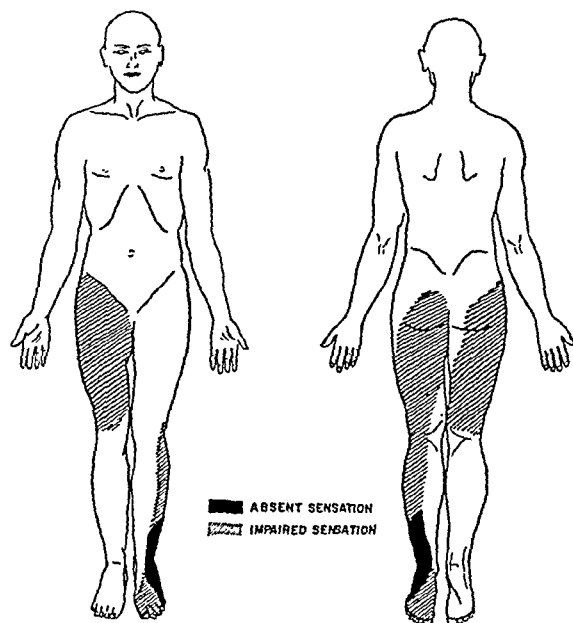


Fig. 1.—Absent and impaired sensation.

process. At the level of the second lumbar vertebra, corresponding to the position of the defect demonstrated by the iodized oil, there was a firm, rubbery, yellowish white tumor mass measuring about 2 cm. in its widest diameter (fig. 2). The tumor appeared to rise in one of the main roots on the left side and was slightly adherent to the dura, but at least five or six adjacent roots were firmly fixed to the mass. Because of the general inflammatory appearance of the region, a syphiloma or tuberculoma was suspected. A small biopsy of the tumor was taken, the oil removed and the wound closed.

Pathologic Examination.—The tissue removed for microscopic study was 7 by 5 by 2 mm. in size. Microscopic examination showed a dense arrangement of epithelioid cells intermingled with many mononuclear wandering cells. The general arrangement was irregular but there was a tendency for the formation of tubercles. There were several giant cells present in the section and in one portion there was an area of caseation and necrosis. No tubercle bacilli or spirochetes could be identified after careful search. The diagnosis was tuberculoma or gumma.

Additional Data.—The remainder of the laboratory examination on the spinal fluid (completed after operation) revealed total protein 0.3 per cent, sugar 88, chlorides 680, colloidal gold 0123443210 and Wassermann reaction ++ in dilutions of 0.03 and 0.05 cc. The Mantoux test with 0.1 cc. of 1:1,000 and 0.1 cc. of 1:100 old tuberculin intradermally was negative.

Postoperative Course.—The wound healed nicely without complication. There was no change in the symptoms or signs

immediately following operation. Two weeks after operation antisyphilitic therapy was started, beginning with potassium iodide 2 Gm. three times a day and bismuth salicylate 0.2 Gm. weekly. Within two weeks after the specific therapy was started the symptoms began to improve; pain greatly diminished; the catheter was removed from the bladder and the patient voided voluntarily; motion in the lower extremities began to improve. In another week he got out of bed and walked with the aid of a little support. A blood examination (June 10, two and a half weeks after the specific therapy was started) showed the Kline reaction ++++ and the Wassermann reaction negative. General improvement continued and the patient was discharged June 29, 1937, fifty-three days after operation. At this time he was free from all pain; he could walk with a hobbling gait; he had perfect control of his bladder and his cystitis had subsided; the sensory changes were about the same as those found on admission.

Follow-Up.—After leaving the hospital he began to drive his automobile back and forth to the clinic for his treatments, and return of strength in the lower extremities continued, although the weakness of the flexors and extensors of the ankles affected his gait and necessitated his manipulating the brake and clutch pedals with his heels rather than his toes. He received continuous treatment for over a year (until July 1938). The total for this period was twenty-five injections of bismuth salicylate (0.2 Gm. doses) and twenty-two injections of neoarsphenamine in increasing doses from 0.1 to 0.6 Gm. Finally twelve injections of arsphenamine (0.4 Gm. doses) were given. At the end of this time he felt so well that he failed to come for treatment and returned only after urging in April 1939.

Two years after operation, on complete check-up, he was found to complain only of trifling weakness of the lower extremities, mostly in the ankles; there was steady increase in motility for one and a half years but none thereafter. It is impossible for him to stand on his heels or toes, although there is virtually complete return of strength elsewhere in the extremities. There is very slight atrophy of the left buttock and thigh. Whereas all reflexes but a sluggish right patellar jerk were absent prior to operation, after two years the right patellar jerk was ++++ and the left ++; the ankle jerks were absent; the plantar responses were flexor though sluggish. The sensory impairment showed little or no change from the original condition but there were no pains or paresthesias of any kind. Bladder and rectal functions were normal. Blood Wassermann and Kline reactions were negative. The spinal fluid showed normal color and manometrics, cells none, total protein 0.15 per cent, gold curve 1112100000, Wassermann reaction negative in all dilutions from 0.005 to 0.6. He has consented to resume treatment.

COMMENT

A nineteen year interval existed in this case between the initial lesion and the onset of symptoms of syphilis of the nervous system. A year elapsed between the onset of pain and the final development of urinary retention and loss of motility. There was nothing about the conditions found to indicate that the disease involved other than the cauda equina, and with the evidence of obstruction of the spinal canal a neoplasm seemed likely. The failure of the iodized oil to descend fully into the sacral end of the meningeal sac, no doubt as a result of adhesions there, should have suggested a condition other than a localized tumor, though a mass at the level of the second vertebral body was definitely outlined by the oil. The information concerning the Wassermann reactions of both blood and spinal fluid prior to operation was to the effect that they were negative. But there must have been an error regarding the spinal fluid, for it subsequently was found to be positive and the blood was found, after provocative treatment, to be positive as well (negative Wassermann but 4+ Kline).

The operation served no purpose but to establish the diagnosis as not that of neoplasm. It was impossible to differentiate syphilis from tuberculosis in the gross and

microscopic appearance of the lesion, but the absence of signs of tuberculosis elsewhere in the body and the establishment of positive tests for syphilis clinched the diagnosis.

If the presence of syphilis by serologic or complement fixation tests had been known originally, specific therapy should, of course, have been tried before exploratory operation; but no harm was done by operation and it has been valuable to know the exact nature of the disease. There was but one gummatous tumor in the exposed region and it was sufficient to explain all the symptoms and neurologic phenomena. The rapid response to treatment is both interesting and gratifying and, even though it is recognized that a certain amount of spontaneous remission might occur, there is little doubt that the antisyphilitic treatment here deserves the major credit.

Gumma of the central nervous system is a late development of syphilis. It almost invariably represents but a part of a more widely spread involvement of the nervous system, although it may sometimes be the only part of which there are clinical manifestations. The smaller gumma often goes unrecognized while the larger may be clinically indistinguishable from a neoplasm. Its most frequent location is the brain, and in the past it was thought to occur so regularly as to comprise an impressive portion of all tumors of the brain; but this is no longer true and gumma of the brain is now only occasionally encountered in neurosurgical clinics or elsewhere. Even so, it always deserves consideration in the differential diagnosis of intracranial tumors.

Gumma of the cord occurs even less often than of the brain and deserves little consideration in the differential diagnosis of intraspinal tumors. The same cannot be said, however, for other forms of syphilitic diseases of the cord, since meningitis, myelitis and meningomyelitis are the usual syphilitic lesions and can, in part or wholly, simulate a neoplasm.

With few exceptions, gumma of the central nervous system has its origin in the meninges; and, while its extension may be into the substance of the cord or brain as the case may be, occasionally its growth is entirely extraparenchymal. Extension into the cord results in a fusiform enlargement and clinical signs of a partial or complete transverse myelitis that may have all the aspects of a glioma. A single intramedullary gumma is more usual but multiple ones do occur. The extramedullary gumma may also be single or multiple but in this case the latter is more frequent and the size may vary from small rice-grain nodules to larger tumors measuring from 2 to 3 cm. There is a tendency for the slowly growing extramedullary gumma to form a flattened mass which either locally compresses the cord or completely encircles it. Even though this type may not actually invade the cord it becomes adherent to its pia covering. The adjacent nerve roots on the other hand are often both compressed and invaded, although complete destruction of a root is exceptional.

There are instances, according to Nonne, in which gummatous nodules form on the nerve roots without the presence of more than minimal involvement of the meninges. The pathologic appearance is that of single or multiple cylindric or spindle shaped enlargements along the course of the nerve root, the multiple arrangement looking much like "pearls on a string." Nonne states that these formations are more apt to occur on roots in the cervical and dorsolumbar regions but cites Kahane's statement that the cauda equina may be affected in the same manner. This is the only reference

encountered in which a gummatous process of the cauda equina, comparable to the author's case, is directly referred to, although Winkelman and others have pointed out that syphilitic meningitis and radiculitis seem to have a favorite location in the cauda equina.

The clinical manifestations of an intraspinal gumma would obviously vary greatly, depending on its location and the extent of its involvement of cord, nerve roots and meninges. In general it may be said that the significant features of the syndrome, particularly with relation to the extramedullary gumma, are usually, first of all, radiating pains and hyperesthesias resulting from irritation of sensory roots. Later in the progress of the



Fig. 2.—Tumor mass at level of second lumbar vertebra, corresponding to position of defect demonstrated (as shown in inset) by iodized oil.

disease, further compression or secondary invasion of both sensory and motor roots leads to circumscribed anesthesias and localized palsies of a lower motor neuronal type. The latter implies atrophy, flaccidity and fibrillary twitching of the muscles and an absence of reflexes. Finally, with the increase in the size of the tumor and compression of the cord there will be evidence of partial or complete transverse myelitis consisting of spastic paralysis, widespread sensory loss and impaired function of the bladder and rectum.

In case the gumma involves the cauda equina (as in the case reported here) the signs would, of course, not be those of compression of the cord but only of involvement of the lumbar and sacral roots, characterized first by radiating pains in the lower extremities and later by impaired sensation, flaccid paralysis, atrophy, loss of reflexes and disturbed function of the bladder and rectum.

Thus in every respect a gumma arising from the spinal meninges can produce a clinical picture indistinguishable from an intraspinal neoplasm; this has been attested by numerous authorities.¹ Nonne² states that "in general one can think of the possibility of a gumma whenever the symptoms of an extra- or intramedullary tumor are present" and he refers to cases described by Osler, Orłowsky, Gowers and Williamson. In Rosenthal's case, cited by Nonne, "the tumor (gumma) was 3 cm. long and compressed the cord from the second to the third cervical roots." Winkelman³ reports the case of a physician suspected of having a new growth compressing the cord who at operation was found to have "focal gummatous meningomyelitis." Southard and Solomon⁴ report, as an illustration of syphilis of the nervous system, a case of compression of the cervical cord by a gumma of the meninges.

Of course it has long been known that syphilitic pachymeningitis, without gummatous formation, may of itself occasionally produce such thickening and contractile scarring of the meninges as to cause the effects of compression of the cord. The classic example of this was first described by Charcot in 1871 under the heading of "pachymeningitis cervicalis hypertrophica." It may be impossible to differentiate clinically this condition from that of gumma.

The differentiation of a gumma from a nodule of tuberculosis may offer considerable difficulty even when the lesion is examined both grossly and microscopically. Final decision often rests on distinguishing one of the diseases elsewhere in the body.

Study of the spinal fluid can be of but limited aid in differentiating a gumma from an intraspinal neoplasm. The abnormal manometric observations, xanthochromia, increased cell count and increased protein content of the spinal fluid are all conditions that may be common to the two. The Wassermann reaction alone is the distinctive difference but implicit reliance in this differential point is sure to be misleading occasionally; on the one hand the Wassermann test might fail to give a positive reaction in the presence of a gumma, and on the other hand it has been an experience common to all neurosurgical clinics to find both syphilis of the nervous system and neoplasm of the cord present in the same patient.

A useful test for differentiation in questionable cases would be a trial period on antisyphilitic treatment but with the realization that even this has limitations. It has been found that gummatous lesions do not always respond to treatment and certainly with gumma of the brain, undue temporizing with nonoperative therapy has no place.⁵

A reasonable attitude to assume with regard to treatment in cases in which there is a question of the diagnosis between syphilitic and neoplastic compression of the cord is to try a short period of antisyphilitic treatment not exceeding a few weeks and, if no improvement results, an exploratory laminectomy should not be delayed. When a gumma is disclosed at operation there

is usually little opportunity to do anything about it surgically. No attempt should be made to remove an intramedullary gumma, but an extramedullary one might with reason be resected provided the procedure necessitated no needless damage to viable structures. Constricting bands may be cut and the dura may be left unclosed as a decompressive measure if occasion demands.

The prognosis in the treatment of gummatous disease of the nervous system depends largely on the stage at which intensive antisyphilitic treatment is started. Hope for at least some improvement is always justifiable even though the results of treatment in some cases are disappointing. Winkelman states that even when treatment is begun early the improvement obtained stops short of complete recovery.

ROENTGEN STUDY OF INTESTINAL MOTILITY AS INFLUENCED BY BRAN

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AND

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✓ The very extensive use of bran as a laxative challenged this study of the influence of this material, often considered merely a dietary constituent, on the functions of the bowel.

That bran has an influence on intestinal evacuation is a commonplace observation. That bran constitutes a necessity to keep in good health certain herbivora under conditions of domestication is also quite generally admitted. The question we have set ourselves to answer is in what way bran affects the intestinal functions of man: does it stimulate peristalsis, and if so where; or does it stimulate secretions; does it produce irritation? Particularly do we desire to determine the effect of bran on persons suffering from "constipation," particularly in what forms of colon stasis bran may be useful and in what varieties it is of no value; also to what extent bran may be harmful in conditions of disease and how its effects are produced. The observations reported in this study deal chiefly with the effects of bran on intestinal motility.]

Since the roentgen rays enable us to obtain ocular demonstration of the progress of material through the gastrointestinal tract, this method of investigation certainly assumes a role of first importance in the attack on our problem. In looking over the literature we discovered, much to our disappointment, that there exists nowhere a generally accepted opinion as to the exact time relations of the passage of a contrast meal through the "normal" gastrointestinal tract. This is due to lack of a sufficiently extensive study of this question.

To make our observations reliable and a basis for our subsequent study on persons suffering from constipation, we have thought it necessary to study at least a hundred different healthy individuals. We subjected these to gastrointestinal serial roentgenologic exami-

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Technical cooperation was given by William C. Tinsley. With the assistance of Michael H. Streicher, M.D., of the Department of Medicine, University of Illinois College of Medicine. From the Department of Pharmacology and Therapeutics and the Department of Roentgenology, University of Illinois College of Medicine. Assisted by a grant from the W. K. Kellogg Company, Battle Creek, Mich.

nations taken at suitable intervals until the tract was empty. We thus report what we believe to be the largest series of systematic examinations of the passage of a barium sulfate meal through the alimentary tract of healthy young people.

METHOD OF STUDY

The observations reported were conducted chiefly on a group of young medical students who were apparently in good health and of normal bowel habits. Their ages ranged between 20 and 30 years. In addition, we examined a group of twelve women office workers of about the same age.

As the emptying time of normal individuals varies to some degree (variations up to twenty-four hours were noted) we made the control examinations with barium suspension at two separate intervals.

In a group (group 1) of fifty individuals, the following procedure was used: We administered a barium sulfate meal to each of the fifty subjects and, after complete emptying of the initial barium meal, bran was given for one week, 1 ounce (30 Gm.) daily. During the following week, bran plus barium sulfate was given in each case. The emptying time was determined carefully while bran was continued. Then the volunteer was permitted to rest one week. After this rest a barium sulfate meal was given again to all persons in this group as a repeat control and also as a possible means of determination of any subsequent effect of bran on the emptying of the barium.

In a second group (group 2) seventy-six other subjects were used. Barium sulfate was administered to each individual of this group, a gastrointestinal x-ray series was taken and another series was repeated one week later as a control with barium sulfate alone. On the completion of this second control series, bran was given daily to each person for one week. The follow-

Each gastrointestinal x-ray series was conducted as follows: The subject was given a dose of from 60 to 70 Gm. of barium sulfate in water early in the morning. Following this, roentgenograms were taken at three, eight and twenty-four hour intervals, and then every twenty-four hours until the gastrointestinal tract was empty. During the bran period the subject was

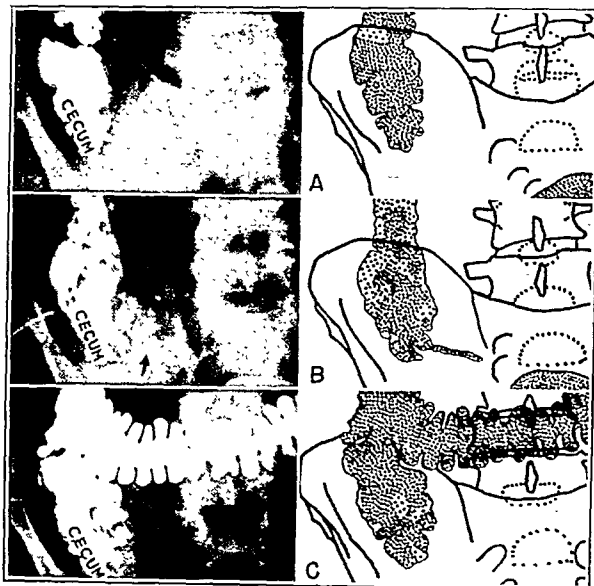


Fig. 2.—Visualization of the appendix in the bran series (B). No visualization in the first and second control series (A and C).

given 1 ounce of a commercially prepared bran ("All-Bran") daily for two weeks. In addition, a barium meal was given at the beginning of the following week while bran was continued in order to visualize the effect of the bran.

The roentgenograms were made with the subject lying prone (on the abdomen) on a Potter-Bucky horizontal table. The exposures included the abdomen and pelvis, thus giving an easy and complete survey of the entire gastrointestinal tract.

An objection may be raised to the use of barium that this substance, though probably quite indifferent to the walls of the intestine, may delay the progress of the contrast meal. Indeed, some persons have spoken of "hardness" of the stools after the ingestion of barium. Barium, however, is not believed to show objectively any marked influence on intestinal movements. To lessen this possible objection we diminished the quantity of barium ingested to 25 to 30 Gm. per individual in one group of cases. We found the rate of progress practically the same as in the other cases. Of course, conditions were maintained constant in the control series and in the bran series within each individual group.

GASTRIC EVACUATION

We have found no significant change in the gastric evacuation time of normal individuals who ingested bran. Nor have we noted any connection between the ingestion of the barium meal and changes in the evacuation of other portions of the alimentary tract while the barium and bran were in the stomach.

SMALL INTESTINE

These studies revealed no obvious changes in the evacuation of the small intestine excepting in one case, in which a highly accelerated emptying of the small

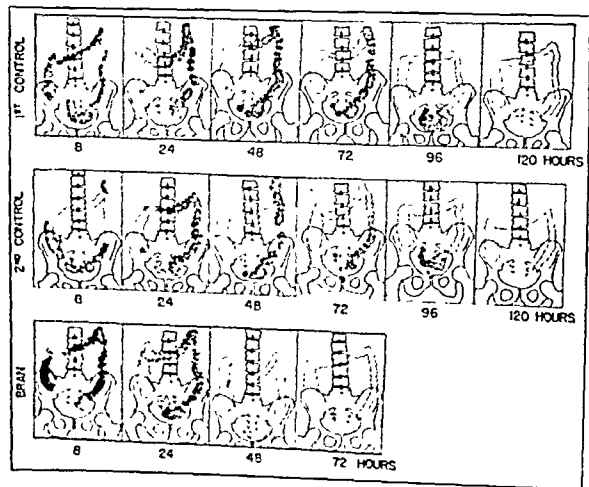


Fig. 1.—Specimen of three gastrointestinal series taken a week apart on the same individual showing bran accelerated evacuation by sixty hours.

ing week bran plus barium sulfate was given and emptying of the colon was studied (fig. 1).

We also repeated examinations on eighteen members of group 1 several months later, employing the method used for group 2. The purpose of these repeat examinations was to determine the effect of bran, when given as in group 2, on the movements of the colon of the same individual.

intestine was noted after the use of bran. In this case the contrast medium reached the sigmoid flexure within six hours. It is of interest to note that in this case the total emptying time showed no change from the normal.

CECAL EMPTYING TIME

Bran has relatively little effect on optimal (twenty-four hours) cecal emptying. This occurred in the control series within twenty-four hours in 131 of the first barium tests and in 129 of the second barium tests on 117 patients (92.8 per cent). In the bran series it occurred within twenty-four hours in 141 of 144

TABLE 1.—Cecal Emptying Time

126 Patients (144 Examinations)								
Emptying Time in Hours	First Barium Control Test			Second Barium Control Test			Bran Plus Barium Test	
	No. of Patients	No. of Examinations on Each	Total Examinations	No. of Patients	No. of Examinations on Each	Total Examinations	No. of Patients	No. of Examinations on Each
24	103 ^a	1	103	105 ^b	1	105	107 ^c	1
	14	2	28	12	2	24	17	2
48	7 ^d	1	7	15 ^e	1	15	3 ^f	1
	3	2	6					
Total.....			144			144		144

a. One patient several months later showed a twenty-four hour emptying time.

a. One patient several months later showed a twenty-four hour emptying time in the first barium test and a forty-eight hour emptying time in the second barium control test.

b. Six patients several months later showed a twenty-four hour emptying time in the first barium test and a forty-eight hour emptying time in the second barium control test.

c. One patient several months later showed a twenty-four hour emptying time in the first barium test and a forty-eight hour emptying time in the second barium control test.

d. One patient several months later showed a forty-eight hour emptying time in the first barium test and a twenty-four hour emptying time in the second barium control test.

e. Six patients several months later showed a forty-eight hour emptying time in the first barium test and a twenty-four hour emptying time in the second barium control test.

f. One patient several months later showed a forty-eight hour emptying time in the first barium test and a twenty-four hour emptying time in the second barium control test.

TABLE 2.—Cecal Emptying Time and Total Emptying Time in Seven Cases with Forty-Eight Hour Evacuation in Both Barium Control Tests

Case No	Emptying Time in Hours					
	First Control Test		Second Control Test		Bran Series	
	Cecal	Total	Cecal	Total	Cecal	Total
8	48	72	48	96	24	72
15	48	72	48	72	24	72
22	48	72	48	72	24	72
25	48	72	48	72	24	48
95	48	72	48	48	24	48
96	48	120	48	96	48	120
130	48	72	48	72	24	24

examinations in 124 cases (98.4 per cent). A forty-eight hour evacuation time was noted in fourteen cases of the control series; this number was reduced to three instances in the bran series. It was not delayed beyond forty-eight hours in a single case.

We conclude, therefore, that:

1. Bran does not accelerate a twenty-four hour cecal emptying time to any marked degree.

2. It is probably significant, however, that acceleration in cecal emptying time occurred frequently in 78 per cent of the few cases (10 per cent) in which there was a slow (forty-eight hours) cecal evacuation in the

EVACUATION OF THE APPENDIX

We observed a filled appendix in roentgen in several cases in the bran series in which the appendix was not visualized in the two preceding control tests. This observation is of interest when we recall that to be visualized by x-rays, the lumen of the appendix must have been previously emptied by a kind of action of the cecum to permit the subsequent action of barium. Visualization of the appendix is a routine manner in some clinics by administration of barium and magnesium sulfate, by "cleaning out" the appendix, gives the appendix a chance to get into the appendical lumen and it radiopaque. Visualization of the appendix is the result of preliminary suction and followed by filling with contrast medium. If we apply this experience to the evaluation of the visualization of the appendix in the bran series, we believe that it may aid in emptying the appendix in some cases (fig. 2). This may be of some importance as a



Fig. 3.—Effect of bran on asymptomatic hypertonic bowel: control test, twenty-four hours after barium meal. C, second control test, twenty-four hours after barium meal. B, bran test, twenty-four hours after barium meal.

aid to prevent stasis in the appendix. This is somewhat corroborated by the fact that in five cases (approximately one third of those which showed visualization of the appendix after bran) the emptying of the colon was also accelerated.

THE STUDY OF TONUS

Our studies revealed a rather interesting and hitherto unobserved fact regarding the influence of bran on the tonus of the colon. Normally the haustral contractions in the colon are regular and evenly spaced; the haustral sacculations are smoothly outlined. In some individuals hypertonicity may produce significant changes: the shadow of the involved section of the colon is narrower, the haustrations become irregular and are closer together. The reduction of the tonus may be so marked that the narrow portion becomes thin as a lead pencil.

In thirteen cases of hypertonic haustration (visualized in both control series) we observed definite changes in the appendix after bran (fig. 3). All of these cases showed

decrease of the hypertonic tendency of the haustrations and a remarkable approach toward the normal state.

In these cases neither the cecal nor the total emptying times showed any changes which paralleled the improvement of the spastic condition. In thirteen cases

TABLE 3.—Total Emptying Time: A Study of 126 Patients (144 Examinations)

Empty- ing Time in Hours	First Barium Control Test			Second Barium Control Test			Bran Plus Barium Test		
	No. of Pa- tients	No. of Exami- na- tions on Each	Total Exami- na- tions	No. of Pa- tients	No. of Exami- na- tions on Each	Total Exami- na- tions	No. of Pa- tients	No. of Exami- na- tions on Each	Total Exami- na- tions
24	1	1	1	1 ^a	1	1	7	1	1
48	34 ^b	1	34	42 ^c	1	42	60 ^d	1	60
	3	2	6				5	2	10
72	65 ^e	1	65	58 ^f	1	58	46 ^g	1	46
	5	2	10	8	2	16	4	2	8
96	18 ^h	1	18	21 ^k	1	21	7 ^m	1	7
	2	2	4				1	2	2
120	4	1	4	5	1	5	4 ⁿ	1	4
	1	2	2						

a. Showed a seventy-two hour emptying time in the repeat examination several months later.

b. Four patients several months later showed a seventy-two hour emptying time in repeat (second) examination and one patient a ninety-six hour emptying time.

c. Five patients several months later showed a seventy-two hour emptying time and two of them a ninety-six hour emptying time in the repeat examination.

d. Five patients several months later showed a seventy-two hour emptying time in the repeat examination.

e. Four patients several months later showed a forty-eight hour emptying time and two patients an emptying time of ninety-six hours in the repeat examination.

f. Five patients several months later showed a forty-eight hour emptying time, one patient a twenty-four hour, and another a ninety-six hour emptying time in the repeat examination.

g. Five patients several months later showed a forty-eight hour emptying time, one patient a 120 hour emptying time and another patient a ninety-six hour emptying time in the repeat examination.

h. Two patients several months later showed a seventy-two hour emptying time and one patient a forty-eight hour emptying time in the repeat examination.

k. Two patients several months later showed a forty-eight hour emptying time and one patient a seventy-two hour emptying time in the repeat examination.

m. One patient several months later showed a seventy-two hour emptying time and another one a 120 hour emptying time in the repeat examination.

n. One patient several months later had a seventy-two hour emptying time and another a ninety-six hour emptying time in the repeat examination.

TABLE 4.—Influence of Bran on Total Emptying Time in Normal Individuals: A Detailed Study of Thirty-Five Patients

Total Emptying Time Without Bran in Hours	Number of Persons Showing Acceleration in the Colon by Bran			
	24 Hours	36 Hours	48 Hours	60 Hours
120	..	..	1	..
120-96	..	1	..	1
96	3	..	2	..
96-72	..	5	..	1
72	16	..	2	..
72-48	..	1	..	..
48	2	..	..	..
126	21	7	5	2
Total	(17.4%)	(5.55%)	(3.6%)	(1.58%)

only two were found in which there was well defined accelerated emptying. This relationship is not surprising, since hypertonus has little effect on the propulsion of colonic contents. Conveyance of feces is chiefly the result of so-called mass movements (Holzknecht), which are observed occasionally on fluoroscopic examination. In addition, broad contractions similar to peristaltic waves are also known to aid in the passage of fecal contents. Haustral contractions usually produce churn-

ing of the contents and no substantial propulsion, so a decreased tonus is not associated with delayed propulsion.

This observation does not negate the clinical maxim that, in actively i. e. symptom-producing spastic colon, bran is contraindicated, but merely that it may help prevent an attack when taken during the asymptomatic stage.

TOTAL EMPTYING TIME

To evaluate the action of any drug or food on intestinal motility, it is necessary to define the characteristics of total emptying. There exist marked physiologic variations in total emptying times. This is substantiated by such variations frequently noted in our studies of several persons on whom examinations were repeated (table 3) several months later.

Table 4 shows the total emptying time of the colon in normal individuals when accelerated by bran.

The evaluation of the influence of bran on emptying time is based on a comparison of the results with two repeat barium control tests in the same individuals. We disregarded those cases in which there was only one barium control test. Bran was considered to have influenced the emptying time when there was a change of at least twenty-four hours between the bran and the control tests.

In 126 cases only three showed delayed emptying in the bran series. Two of these showed no delay on repeat examinations some months later; therefore this observation must be considered a variation.

ANATOMIC CHANGES

A study of intestinal motility considers anatomic variations which may be congenital, constitutional or acquired in consequence of an operation. We found major variations in thirty-five and minor variations in fourteen "normal" individuals which illustrates the frequency of such variations.

The thirty-five cases contained a group with considerable ptosis, particularly of the transverse colon, with or without a reduplication of the hepatic or splenic flexure. In this group are included cases of mobile cecum and cases of undescended and pelvic cecum. Most of these cases showed prolonged emptying time on control tests. Bran did not alter the emptying time of the latter group. However, ten of twenty-one cases of ptosis of the transverse colon showed accelerated emptying in the bran series.

Fourteen cases showed slight ptosis, reduplication of one or both flexures, and, a few, elongation of the sigmoid. The emptying time of these subjects was also comparatively prolonged. In three cases of slight ptosis bran produced acceleration of the emptying time. No marked delay was noted in cases in which there was reduplication of the hepatic and splenic flexure. In some cases, variations were undoubtedly of temporary character.

CONCLUSIONS

Studies as to the influence of bran on emptying time of the bowel in normal individuals may be summarized as follows:

1. (a) Acceleration of the optimal cecal emptying time (twenty-four hours) is evident in but few cases (table 1).

(b) Bran accelerates the emptying time in most cases which show a forty-eight hour cecal emptying time (table 2).

2. The daily use of bran decreases the total emptying time of about 25 per cent of normal persons. This decrease varies from twenty-four to sixty hours.

3. Bran produces variations in the tonus of the colon. In cases in which hypertonic haustrations are present, a marked reduction of the spasm has been noted after the use of bran.

4. The appendix was visualized in some cases after bran ingestion in which control observations did not show that organ.

COMMENT

✓ From a practical point of view these studies show that bran does not change to any extent the normal sequence of events in the bowel. Bran does not accelerate optimal evacuation of the cecum, but it accelerates evacuation in those cases in which the cecal emptying time is forty-eight hours. This, with appendix visualization in a number of instances in which that organ was not seen in the controls, makes it desirable to make further special studies of the effect of bran on the poorly draining appendix.

Another remarkable fact brought out by this study is that bran seems to relieve the spasm in cases of (probably moderately) spastic colon.

The observation invites a close study of the uses of bran in cases of spastic colon. It is essential to determine in which cases of spastic colon it may be used as a preventive of paroxysms of colic and in which types it should not be used at all. ✓

Clinical Notes, Suggestions and New Instruments

CONGENITAL SYPHILITIC SYRINGOMYELIA WITH ARTHROPATHY OF ELBOW

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Assistant Visiting Neurologist and Visiting Neurologist and Chief of Service, Bellevue Hospital, respectively

Though it has been recognized for some time that syphilis of the central nervous system may produce a lesion of the syringomyelic cord secondary to pachymeningitis with inflammation of the cord and cavity formation,¹ it is exceedingly rare to find this clinical picture in congenital syphilis. We are therefore reporting a proved case which in addition presented classic syringomyelic arthropathy of the right elbow joint, a combination of conditions we have been unable to find recorded hitherto in the literature.

REPORT OF CASE

J. S., a Negro boy aged 12, admitted to the Bellevue Hospital neurologic wards Nov. 4, 1936, complained of weakness and numbness of the right leg. He had been in good health until August 1936, when, while walking in the street, he suddenly felt his right leg get numb and weak and crumple under him. He was unable to walk without support, and a cast was put on the right leg for about four weeks. A severe yet painless ulceration of the right foot was found when the cast was removed. He was advised to soak the foot in hot water, which he did and sustained a severe burn of the foot, which refused to heal, though the patient recalls that there was no associated pain. He therefore sought help at the Fordham Hospital, where a Wassermann reaction of the blood was reported as 4+ and antisyphilitic treatment was instituted. It was also brought

out at this time that his father, brother and one sister likewise gave positive Wassermann reactions and were receiving antisyphilitic treatment. The patient's mother had died of tuberculosis four years previously.

On admission to Bellevue Hospital the patient showed normal mental status for his age, with slightly irregular pupils, which however reacted promptly both to light and in accommodation. The visual fields were not restricted and acuity was 20/20 in

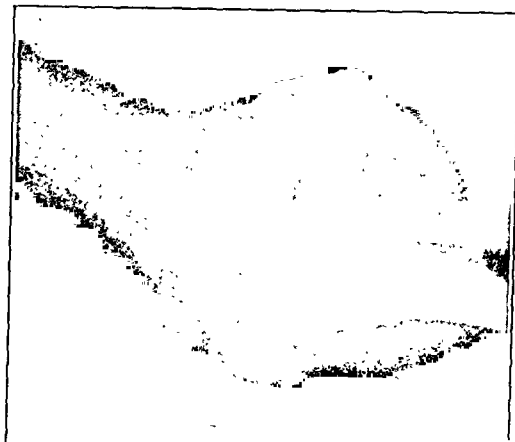


Fig. 1.—Appearance of elbow, showing typical arthropathy.

both eyes. The ocular movements and fundi were normal. There was a loss of sensation of pain, but not of touch or of temperature, over the right side of the face. The muscles of mastication were normal. Hearing was good in both ears. There was no palsy of the palate or tongue. Speech was normal.

There was weakness of all the muscles of the right arm, forearm and hand, with moderate atrophy of the right arm and the interossei of the right hand. There was a similar wasting of the muscles of the right thigh and calf, with foot drop. The motor power of the left arm and leg were normal.

All the deep reflexes of the right arm and leg were absent, whereas on the left side they were all hyperactive. The Babinski sign was present on the left side; on the right side, owing to the foot drop, no plantar response could be elicited.



Fig. 2.—Appearance of elbow, showing typical arthropathy.

The sensory examination was most interesting in that on the right side, from the third cervical to the sixth dorsal segments, there was complete loss of pain and temperature sensation. In this analgesic belt touch was felt normally, yet hot and cold test tubes could not be distinguished, nor could pain be elicited by pricking with a pin point. There was a similar area in the lower cord, extending from the fifth lumbar to the fourth sacral region on the right side, in which pain and temperature sensation was impaired. The latter area

1. Kennedy, Foster, and Holmes, G.: Two Anomalous Cases of Syringomyelia. *Proc. Roy. Soc. Med.* 2:1 (Oct. 29) 1908. Schmaus, Hans; *Pathologische Anatomie des Rückenmarks*, J. F. Bergmann, Wiesbaden, 1901, p. 504. Oppenheim, H.: *Text Book of Nervous Diseases*, ed. 7, Berlin, S. Karger, 1923. Nonne, Max: *Syphilis und Nervensystem*, ed. 5, Berlin, S. Karger, 1924. Jelliffe, S. E., and White, W. A.: *Diseases of the Nervous System*, ed. 5, Philadelphia, Lea & Febiger, 1929.

included the right half of the penis and anus. Vibratory sense was markedly diminished in the right arm and leg, yet position sense was relatively well preserved, with only an occasional error. On the left side sensation was normal to all modalities except for slight diminution in vibratory sense.

Lumbar puncture was performed and showed an initial pressure of 230 mm. of water and almost complete manometric block. Total protein of the cerebrospinal fluid was 80 mg. per hundred cubic centimeters, there were 21 lymphocytes per cubic millimeter, and the Wassermann reaction of the spinal fluid was negative. The colloidal gold curve was 5555421000. The Wassermann reaction of the blood was negative (it had been 4+ two months previously before treatment had been begun). Roentgenograms of the skull and cervical vertebrae were negative.

Cisternal injection of iodized oil revealed a series of arrests of the medium at levels of the eighth dorsal, tenth dorsal and first lumbar vertebrae. These were interpreted as multiple levels of obstruction at the regions indicated.

The patient was treated intensively with weekly courses of arsphenamine alternating with series of a bismuth compound. There was very little change in the neurologic picture and he was discharged Jan. 5, 1937, to the outpatient department, where further antisyphilitic therapy was carried on.

He persisted faithfully in his treatments for the next eighteen months, and during this period an arthrodesis of the right ankle joint was performed, which partially stabilized this weak foot. At about this time likewise it was noticed that his right elbow was swelling, with limitation of movement yet no pain of this joint. He was therefore readmitted to the service Oct. 18, 1938.

Results of Treatment in Moore's Series

Duration of Treatment	Total Children	During Subsequent Observation Period of at Least Three Years	
		Cured	Not Cured
6 mos. to 1 yr.	66	12	88
More than 1 yr.	193	44	56

On his second admission the neurologic examination gave almost identical results with those on the first admission except that the atrophy of the right hand was more pronounced with typical main en griffe deformity. The right elbow was markedly enlarged (fig. 1) and easily twice the size of the normal left elbow. It felt indurated and irregular; no crepitus could be elicited, and it was completely without pain. Motion was markedly restricted, so that extension could be carried out to only 130 degrees and flexion to about 75 degrees. Roentgenograms of this elbow (fig. 2) showed typical destructive changes as well as osteophytic new growth areas, with disappearance of articular surfaces characteristic of these arthropathies.

The red blood cell count was 4,700,000, with 12.1 Gm. of hemoglobin and 5,200 white blood cells, with a normal differential count. Nonprotein nitrogen of the blood was 32 mg., and blood sugar 60 mg. per hundred cubic centimeters. Lumbar puncture was again performed and showed considerable delay in the fall, following a rapid and adequate rise on jugular compression, which again was indicative of partial manometric block. The total protein of the spinal fluid was 65 mg. per hundred cubic centimeters, Pandy's test 34 seconds, colloidal gold curve 5555431000, the chloride content 693 mg. There were 12 lymphocytes per cubic millimeter. Wassermann reactions of the blood and spinal fluid were negative.

Roentgenograms of the skull and cervical thoracic and lumbar spines were negative. The heart was not enlarged nor was the shape characteristic of valvular disease. There was no disease of the lungs on either physical or x-ray examination.

The clinical impression was congenital syphilis of the spinal cord with pachymeningitis and partial "strangulation" of the cord, secondary softening and syringomyelic cavity formation in the cervicodorsal and lumbar regions and arthropathy of the right elbow joint. Vigorous antisyphilitic treatment was continued (a bismuth compound and arsphenamine), with complete arrest of the syphilitic process at the time of this report (June 1939).

COMMENT

It is generally thought that neurosyphilis of various clinical types is less frequent in congenital than in late acquired syphilis. Moore² states that approximately 15 per cent of patients with congenital syphilis develop lesions of the central nervous system, and it is known that among the patients with congenital syphilis over 2 years of age the percentage of positive Wassermann reactions of the spinal fluid was about 29 per cent.³ In young adults with congenital syphilis the nervous system is involved in only about 5 per cent and asymptomatic neurosyphilis is uncommon. These facts can be understood more readily when it is realized that the death rate from neurosyphilis in childhood is much higher than that of the other forms of congenital syphilis. This causes a progressive decline in the incidence at the older and adolescent ages, so that only a few children with neurosyphilis reach adult life. Strangely enough, Negroes are more amenable to treatment in this type of syphilis



Fig. 3.—Patient, Nov. 29, 1938, at 14 years of age, showing arthropathy of right elbow and main en griffe of right hand.

than are white patients.² Moore recommends neoarsphenamine and a bismuth compound rather than tryparsamide in these patients and in the accompanying table gives a summary of the results of such treatments in his series.

It is seen, therefore, that the outlook may be far from hopeless, though it is generally agreed that therapeutic results are far less satisfactory in congenital than in acquired neurosyphilis.

Moore has likewise pointed out that congenital neurosyphilis usually occurs in cases in which early infantile lesions were absent or minimal, and this observation was corroborated in the case reported in this paper.

SUMMARY

1. Proved cases of congenital syphilis of the spinal cord with syringomyelic dissociation and arthropathy of the elbow joint are extremely rare.

2. It is felt that the cavitations in the cord were secondary to meningomyelitis with pachymeningitic "strangulation" and secondary softening of cord substance.

3. Intensive antisyphilitic therapy over a period of three years resulted in complete arrest of the process.

140 East Fifty-Fourth Street.

2. Moore, J. E.: *The Modern Treatment of Syphilis*, Springfield, Ill., and Baltimore, Charles C. Thomas, 1933.

3. Ford, F. R.: *Diseases of the Nervous System in Infancy, Childhood and Adolescence*, Charles C. Thomas, Publisher, 1937.

CUTANEOUS MUCOR INFECTION OF THE FACE

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AND

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Recently we¹ reported an unusual case of *Sporothrix* invasion of the breast of a woman, with rather striking therapeutic results. The case which we are recording here is of sufficient rarity to warrant a detailed anamnestic, clinical and pathologic survey. We have been unable to find any other reported examples of cutaneous involvement with the *Mucor* type of fungus and believe this to be a pioneer case, although not all the European literature was available.



Fig. 1.—Side view of both lesions as they appeared before any diagnostic procedures were begun.

G. B., an unmarried white youth aged 17, was first seen by one of us (J. L. W.) in the office March 31, 1939. He complained of a "boil" on the right cheek of two weeks' duration. This had appeared first as a small red papule about the size of a pinhead. It had not been painful, it had slowly grown larger, and there had been some exudation of serum from the surface of the lesion. The patient had been tending live stock on a farm and had noticed a "growth" on the noses of several sheep under his care. It was shortly after he had seen these growths that the papule appeared on his right cheek. It could not be definitely established that he had cut himself while shaving or had otherwise abraded his face. (It is entirely

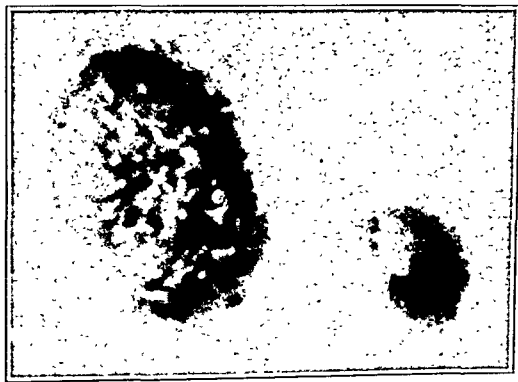


Fig. 2.—Close view to show papillomatous nature of larger lesion.

possible that this did occur.) He used a shaving brush that he had had for more than two years. Approximately ten days after the first papule appeared another small lump was noted near the first; it had grown slowly. There had been no itching at any time; the lesion had slowly progressed, and the top had taken on a red, "angry" appearance with some

bloody serous exudation. A small "gland" became enlarged under the lobe of the right ear; it was not painful or tender. There were no constitutional symptoms, and no other lesions had made their appearance.

The past medical history, familial history and general systemic review were noncontributory.

The general physical examination, aside from the cutaneous and glandular lesions to be described, showed no abnormality. On the right cheek, 2 inches (5 cm.) lateral to the angle of the mouth and on a line with the upper lip, were two lesions (fig. 1). The larger lesion was approximately round and 2 cm. in diameter; it presented an appearance of dark red jelly-like papillomatous tissue from which exuded a small quantity of serosanguineous fluid (fig. 2). The smaller lesion, the size of a split pea, was likewise raised, and reddish, but showed a smooth surface with no "weeping." There was no induration, redness or tenderness about either lesion (fig. 2). Beneath the lobe of the left ear and just below the mandibular ramus (fig. 1) was a moderately enlarged, hard, nontender movable



Fig. 3.—Microscopic view of fungous growth.

mass about the size of an almond. No other cervical or submaxillary nodes could be felt. There was no general lymphadenopathy; the pulmonary fields were normal to physical examination; the spleen could not be felt.

The granulomatous noninflammatory lesion aroused the suspicion of one of us (J. L. W.), and smears from the larger lesion were examined in the office. These stained smears showed numerous staphylococci, but no fungi, spores or filaments could be found. Dark field examination yielded negative results. A tentative diagnosis of fungous infection was made and the patient was referred to the laboratory for smear, cultures and biopsy. One of us (A. R. K. M.) performed these diagnostic procedures, the results of which were as follows:

Laboratory investigations consisted of smears and cultures of exudate, and mounts and cultures of small pieces of tissue removed from the lesion.

The exudate showed many pus cells and numerous staphylococci, but no fungus spores were identified though it is recognized that they may have been overlooked or regarded as leukocytes. Tissue teased and mounted in potassium hydroxide showed oval structures considered to be spore bodies, but evidence of branching or of mycelium was not demonstrated.

1. Wade, James L., and Matthews, A. R. K.: Bilateral Sporotrichosis of Breast, *Arch. Int. Med.* 61: 916-922 (June) 1938.

Cultures of the tissue and of the exudate were made with Sabouraud's agar both by surface inoculation and by pour plates. In each instance a fluffy white rapidly increasing growth was obtained. This penetrated the mediums in all directions and sent out aerial filaments. Microscopic examination revealed a fungus of the Mucoraceae family with typical chlamydo-spores and sporangia (fig. 3). No attempt to subclassify the growth was made. No other fungi appeared in the cultures. It seems unlikely that such cultures could have been obtained accidentally, and we believe that the evidence established Mucor as the causative organism of these cutaneous lesions.

TREATMENT

After laboratory procedures had confirmed the tentative clinical impression and had identified the causative organism, treatment was begun. Since no specific or definite therapeutic agent could be discovered in the literature or textbooks, it was decided to use the iodides, rather empirically, it is admitted. Sodium iodide in doses of 1 Gm. was given intravenously every third day, and the patient was instructed to take potassium iodide by mouth beginning with five drops three times a day and increasing one drop a day until fifteen drops was being taken three times a day. After the second parenteral treatment there was a definite regression in the size and color of the lesion and at the end of twenty-four days the lesions had healed completely, leaving no scarring. The lymphadenopathy beneath the right ear likewise disappeared, and when last seen, May 16, the patient considered himself cured and had discontinued his oral medication. At no time were there signs or symptoms of iodism.

COMMENT

The fact that we have found and identified the causative organism in two rather unusual cutaneous lesions, both within a comparatively short time, should serve to increase the clinical awareness among the profession of the possibility of such disease. The iodides seem (in these two cases at least) to exert almost a specific effect.

816½ Market Street.

COMPLETE ANURIA DUE TO CRYSTALLINE CONCRETIONS FOLLOWING THE USE OF SULFAPYRIDINE IN PNEUMONIA

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Sulfapyridine is being so widely used, it is imperative that physicians have knowledge of the possible complications which may occur during its administration. We are reporting a most instructive case which clinically bears out in all details the animal experiments reported by Antopol and Robinson¹ Gross, Cooper and Lewis² and the unpublished work of Lloyd R. Jones, professor of bacteriology at St. Louis University. All the investigators report the presence of concretions in the urinary tracts of animals within forty-eight hours after administration of sulfapyridine.

Tsao³ reports a number of cases of hematuria following the use of sulfapyridine and ascribes the death of a child to crystalline concretions forming at the ureterovesical orifices which completely blocked the ureters and resulted in anuria which caused the death of the patient. He states that a urologist's assistance may have prevented the death of the child.

REPORT OF CASE

R. W., a white man aged 42, was admitted to the medical service of the St. Louis City Hospital Oct. 22, 1939, complaining of having had a cold for the previous three weeks. On the day prior to admission he began having intermittent chills, hiccups and pain in the chest. The pain was accentuated on

From the St. Louis City Hospital, Department of Urology and Medicine of the St. Louis University School of Medicine.
1. Antopol, William, and Robinson, H.: *Proc. Soc. Exper. Biol. & Med.* 40: 428 (March) 1939.
2. Gross, Paul; Cooper, F. B., and Lewis, Marion: *The Fate of Urinary Calculi Caused by the Administration of Sulfapyridine*, *Urol. & Cutan. Rev.* 47: 439 (July) 1939.
3. Tsao, Y. F.: *Renal Complications in Sulfapyridine Therapy*, *J. A. M. A.* 113: 1316 (Sept. 30) 1939.

coughing and deep respiration. The past history was essentially negative except for an appendectomy in 1930 and malaria in 1933.

On admission the patient, who was well developed and well nourished, was shaking violently and appeared acutely ill. His



Fig. 1.—Attempted pyelogram showing filling defect of both pelves and calices except the lower right calix; injected opaque solution seen in the ureters only.

temperature was 100.4 F., his pulse was 100 and respirations were 24 and shallow. The nasal passages were obstructed, the throat was red and a postnasal drip was present. The breath



Fig. 2.—Pyelogram showing both kidneys and calices completely filled following the lavage of acetylsulfapyridine crystals.

sounds were depressed over the left base but otherwise no changes were noted. The heart and the abdomen were normal. The blood pressure was 110 systolic, 75 diastolic.

Laboratory studies revealed red blood cells, 3,770,000 and white blood cells 5,600, with 58 per cent segmented forms, 24 per cent stab forms, 17 per cent lymphocytes and 1 per cent

mononuclears. No malarial parasites were found. A catheterized specimen of urine showed acid reaction, specific gravity 1.035, and no sugar or albumin. There were no red blood cells. The Kahn reaction was negative. Blood sugar was 87 mg. per hundred cubic centimeters and nonprotein nitrogen 18. Blood culture was negative. The sputum showed type VIII pneumococci.

A chest plate showed a pneumonic infiltration at the left base. On the day of admission the patient was given sulfapyridine: 15 grains (1 Gm.) every hour for four doses and 15 grains every four hours thereafter.

On the day following admission the temperature reached normal and remained so. October 24 the red blood cells were 4,810,000 and the white blood cells 7,300.

October 26, after four days of sulfapyridine administration, the patient had gross hematuria and began to complain of abdominal cramps and pain in both lumbar areas. The abdomen was soft, with slight bilateral costovertebral tenderness. Sulfapyridine was discontinued. The output for the following twenty-four hours was only 100 cc. of bright red blood in spite of the administration of intravenous fluids. The patient vomited frequently.

October 28 the urinary output was nil and the nonprotein nitrogen was 53. The patient was seen by one of us (Shea), who advised immediate cystoscopy. This was performed under local anesthesia, with the following results: The bladder mucous membranes were congested throughout and several small, white, irregular, soft concretions were found on the floor of the bladder. These readily dissolved in warm water. A similar concretion was seen protruding from the left ureteral orifice, and both orifices appeared lacerated. No. 6 French catheters were passed for 26 cm. on each side. A gritty sensation was experienced on both sides during the passage of the catheters. No drip was obtained on the right side, and a slow blood-tinged drip was obtained on the left. A roentgenogram was taken, which showed no opaque shadows. A pyelogram (fig. 1) showed a complete filling defect in the pelvis of the right kidney with only a small amount of the dye apparent in the upper calix, the major portion of the dye appearing alongside the right catheter. On the left side no dye was seen in the renal pelvis or calices, but some appeared around the catheter, as on the right side. The No. 6 French catheters were withdrawn and No. 8's passed on both sides; the renal pelvis were thoroughly lavaged with warm distilled water. Following this a rapid, clear urinary drip was obtained on both sides. A subsequent pyelogram (fig. 2) showed normal renal pelvis except for a small filling defect in the right pelvis.

The patient showed immediate clinical improvement. The urinary output returned to normal following cystoscopy, and the nonprotein nitrogen estimated October 30 was 27. The urine at this time continues to show from 10 to 15 red blood cells and from 2 to 3 white blood cells per high power field.

CONCLUSIONS

1. The supersaturation of acetylsulfapyridine crystals during the administration of sulfapyridine is sufficient at times to cause a complete obstruction in the urinary tract.

2. This condition can be promptly and satisfactorily relieved by cystoscopically inserting catheters in the ureters and pelvis, and lavage with warm physiologic solution of sodium chloride or sterile water.

3. These crystals, even in large amounts, which cause obstruction, are not opaque to the x-rays; therefore a flat roentgenogram is of no value. The symptoms of kidney colic and/or hematuria should make one suspicious of crystalline concretions in the urinary tract and should not be mistaken for gastric upsets.

4. The hematuria noted clinically is probably the result of minute traumatism of the mucous membranes by the crystals rather than damage to the renal parenchyma and therefore is of no grave consequence.

5. The forcing of fluids in conjunction with sulfapyridine therapy is probably appropriate, since it will relieve the supersaturation of the urine to some extent.

6. It incidentally suggests that supersaturation of any form of crystals in the urine may result in calculous formation, thus

giving added value to the work of Rubin Flocks⁴ in calcium metabolism.

7. Death of our patient was prevented apparently by the cystoscopic manipulation, thus warranting this prompt report.

This case demonstrates the wisdom expressed in the editorial on sulfapyridine in *THE JOURNAL* of Feb. 11, 1939; also the preliminary report of the Council in the same issue, in which it states that the Council "feels that in the light of available evidence the general use of the drug does not seem to be warranted at the present time. The Council feels that, because of the definitely experimental status of the drug, it should be used only by properly qualified persons for investigations of its value."

We feel however that final acceptance of the drug by the Council is well warranted, since the drug has been demonstrated to have definite value and the complications can be satisfactorily treated when encountered.

609 Humboldt Building.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.
HOWARD A. CARTER, Secretary.

DAVIS INHALATOR ACCEPTABLE

Manufacturer: Davis Emergency Equipment Company, Inc., 55 Van Dam Street, New York.

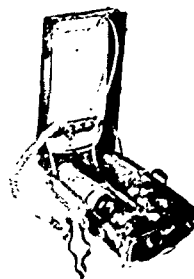
The Davis Inhalator is a portable resuscitation apparatus designed for the administration of a mixture of oxygen and carbon dioxide in cases of asphyxia. The device was first accepted in 1930 (*THE JOURNAL*, July 19, 1930, p. 200). Changes made since then are as follows: 1. Two 16 cubic foot tanks are now in the case instead of one. 2. The pressure reducing valve has been changed to the diaphragm type. 3. The valve is no longer anchored to the case and so may be removed with the two small cylinders and a 50 cubic foot cylinder attached to one side of the valve in place of one of the 16 cubic foot cylinders.

Standard cylinders provided contain 7 per cent carbon dioxide. There is a pressure gage indicating the content of the cylinder in pressure and also in percentage of its original filling. The operator is supposed to use one cylinder until it is empty, when a change can quickly be made to the other. Besides the pressure gage there is a flow meter indicating the rate of flow in liters per minute. It is marked from 10 to 20 liters per minute for one patient and from 20 to 35 liters per minute for two patients. Attachments for three face masks and breathing tubes to the removable breathing bag are also provided. A canvas kit is furnished containing a taper screw device for forcing open the jaw, a mouth gag and a tongue forceps.

The oxygen and gases pass from the pressure reducing valve into the breathing bag, which is connected with a hose leading to the face mask. The gases are delivered to the face piece at a pressure slightly above atmospheric pressure. The air exhaled into the face mask passes into an exhale valve, with a check valve to prevent any of the exhaled air from passing back into the breathing circuit.

The investigation of the Council revealed that this inhalator compared favorably with other accepted inhalators on the market.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Davis Inhalator for inclusion on the Council's list of accepted devices.



Davis inhalator.

4. Flocks, R. H.: Calcium and Phosphorus Excretion in the Urine of Patients with Renal or Ureteral Calculi, *J. A. M. A.* 113:14-1471 (Oct. 14) 1939.

MAICOPHONE HEARING AID ACCEPTABLE

Manufacturer: The Maico Company, 83 South Ninth Street, Minneapolis.

The hearing aid instrument known as the Maicophone consists of a light metal housing of disk form measuring approximately $3\frac{3}{8}$ inches in diameter and 1 inch thickness. The microphone is located behind perforations in the front of the case, and the vacuum tube amplifier is included within the case. At spaced intervals around the periphery of the case are located an off-on switch, a volume control disk and connections for the receiver and battery. On the back of the case is riveted a spring clip for fastening the case to the wearer's clothes. The weight of the unit is approximately $26\frac{1}{2}$ ounces.

The battery case houses a removable frame for holding and making connection to a two cell battery for filament supply current, and a 45 volt battery for plate current supply. The battery measures $5\frac{1}{2}$ inches long by $3\frac{1}{4}$ inches wide by $1\frac{3}{8}$ inches deep. The weight with the batteries is $18\frac{1}{2}$ ounces.



Maicophone hearing aid.

The receiver is of the watch case type, is supported by a head band and contains an opening intended to be opposed to the auditory canal of the user's ear. The diameter of the receiver is approximately $2\frac{3}{8}$ inches and the thickness five-eighths inch. The weight is $2\frac{1}{2}$ ounces.

The investigations conducted on the Maicophone were (1) pure tone, single frequency response tests, (2) intelligibility and articulation tests, (3) speech amplification tests and (4) tests to determine the battery current consumption.

1. *Pure Tone Response Characteristics.*—The microphone was placed in a chamber free from reflections, and pure tones were generated by a loud speaker. The sound output of the hearing aid with the volume control in the maximum output position was then compared by ear with that of a standard calibrated microphone-amplifier-receiver. The sound intensity level within the chamber was regulated at each frequency so as to provide an output tone having a comfortable loudness. Preliminary tests indicated that the response with increasing loudness was substantially linear, thus validating the procedure outlined.

Trend of Amplification

Frequency	Relative Intensity, Decibels
200	5
1,000	20
3,200	35
4,700	30
5,100	25
5,400	?

It was found that amplification started at about 300 cycles per second and gradually increased with frequency up to 3,200 cycles, thereafter gradually decreasing to 5,100 cycles, after which came a rather sharp cut-off. The accompanying table indicates the trend.

No sharp peaks or valleys of amplification were observed. Also the character of the response was judged to be comparatively free from nonlinear distortion.

2. *Intelligibility and Articulation Tests.*—These were performed by the Fletcher-Steinberg technic. The results obtained on one instrument were as follows: Consonant articulation 100 per cent, vowel articulation 96 per cent and syllable articulation 96 per cent. Intelligibility for discrete sentences was 100 per cent. These results vary slightly from set to set, and from speaker to speaker and listener to listener.

3. *Speech Amplification Tests.*—The amplifying power was determined by introducing an electrical insertion loss between the hearing aid amplifier and the receiver of such a character as to insure normal electrical conditions of operation of the amplifier, and by comparing the speech as heard directly with one ear with that heard through the amplifying system with one ear. When these two sounds were judged to be equal in loudness, the insertion loss introduced was taken as the amplifying power of the device. It should be particularly noticed that the two sounds which must be brought to equal loudness differ in quality. Accordingly the figure for amplification which was obtained can mean no more than a balance in loudness between sounds of different character. For vacuum tube amplifier hearing aids of high quality, the useful amplification may be higher or lower in accordance with the type of hearing loss which the aid is intended to correct. Evidently the Maicophone unit submitted for test is best suited to correct perceptive hearing loss since, as may be seen from the pure tone response characteristics, the higher frequencies are amplified more strongly than the lower ones. In any event the test for speech amplification as described gave a loudness amplification of $30 \pm$ decibels.

4. *Battery Consumption.*—Direct measurement gave the following values: new $1\frac{1}{2}$ cell (A battery), 150 milliamperes; new 45 volt battery (B battery), 0.7 milliampere. Current consumption was not affected by altering the position of the intensity control of the amplifier. The Maicophone is neat in appearance and seems to be well built. It provides a high degree of speech clarity. Battery consumption is high, but this is unavoidable in the present state of the hearing aid science.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Maicophone for inclusion on the Council's list of accepted devices.

ANERON ACCEPTABLE

Manufacturer: Sutherland Manufacturing Company, Inc., 1420 New York Avenue N.W., Washington, D. C.

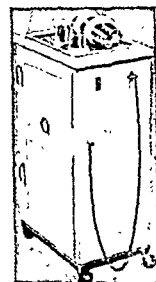
The Aneron is a unit devised to produce local hyperemia by means of negative pressure created within cups applied to the surface of the body. The assembly includes a vacuum pump housed in a metal cabinet, with flexible tubing to be attached to the cups.

There are eleven cups of various sizes and shapes to fit body contours. The smallest cup is made of glass, while the others are of metal with rubber rims. Valves are provided for reducing the vacuum in all the cups except the single glass one, which has simply an aperture on the side for controlling the vacuum with the operator's fingers.

A pump creates the vacuum via the tubing leading to the valves at the top of the cups. When a high vacuum is not desired, a regulating check valve attached in the vacuum line may be used.

The unit was investigated in a clinic acceptable to the Council. It was found to be a rather elaborate mechanism for producing local hyperemia by a method similar to the methods used in conventional cupping technics. When suction is applied, the air is partially evacuated from the cup, lifting the underlying soft tissue and producing a local hyperemia. In the opinion of the Council, the apparatus has a limited therapeutic usefulness and little more can be expected from it than can be achieved by the conventional cupping methods. It is true that the technic with an alcohol flame, although effective, involves a danger of fire. Rubber bulb cups are usually less effective. The Council points out that the Aneron is indicated for use in conjunction with other methods of treatment.

In view of the foregoing report, the Council on Physical Therapy voted to include the Aneron in the Council's list of accepted devices.



The Aneron.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 3, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already existing.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

THE NEW YORK SESSION—1940

Plans are well under way for one of the greatest annual sessions of the American Medical Association ever held in its history. This session is scheduled to take place in New York City June 10-14 inclusive. The meeting places of the various sections will involve the use of the Waldorf-Astoria, the Commodore, the Roosevelt and the Biltmore hotels; registration of Fellows and all the exhibits will be in the Grand Central Palace. The opening meeting will be held in one of the large assembly halls in the same area of New York.

Among some of the special scientific features planned for the New York session will be a panel discussion on the uses and abuses of sulfanilamide and its derivatives. In the General Scientific Meetings special attention will be given to such topics as management of the failing heart, nutrition of the nation, the psychologic aspects of physical disease, new research in technics related to obstetrics, the sympathetic nervous system, varicose veins and the venereal diseases.

The number of applications for places on the programs of the various sections are so considerable in number as to throw a burden on the officials of the various sections who must arrange the programs. In the sections special attention is to be given to new problems in the field of immunology, industrial medicine and cancer.

Announcement has already been made officially that the World's Fair will be continued through 1940. Thus physicians who plan to attend the annual session of the American Medical Association may well plan at the same time to spend a number of days before or after the meeting in attendance on the fair. Hotel reservations should be made accordingly, keeping in mind the duration of the stay planned. Efforts are being made to provide for special consideration to be given to physicians and their families in relation to visiting some of those features of the fair which have attracted the greatest crowds; also special consideration will be given to physicians in the Hall of Science and Health.

Notwithstanding the vast hotel facilities of New York there is no doubt that the accommodations available in the large hotels nearest to the Grand Central Palace will be taxed to the utmost. It is important, therefore, that physicians plan as soon as possible to communicate with the office in New York which is making reservations for physicians in order to assure themselves of adequate accommodations for themselves and their families. These requests should be addressed to Dr. Peter Irving, Chairman of the Subcommittee on Hotels, Room 1036, 233 Broadway, New York City. In *THE JOURNAL* for December 16, 1939, a list of hotels with rates for various accommodations appears on advertising page 32.

From time to time special features of the New York session will be announced in *THE JOURNAL*, and early in May a special convention number will be issued in which the preliminary program will be presented as well as further information concerning many of the special features which New York will offer.

HEALTH OF THE YOUTH OF THE NATION

Elsewhere in this issue appear the recommendations of the American Youth Commission of the American Council on Education as far as they relate to the health of our young people. Strangely, in this document, as well as in several others that have recently been published, a number of statements alleged to be scientific are accepted at their face value without due regard for fact. Thus it is said that one third of the men drafted for the army in 1918 were physically unfit for such service and presumably handicapped to a greater or less extent even for civilian life. Notwithstanding this statement, it is generally recognized that the fitness of the American nation is up to that of most of the other civilized nations of the world. In a selection for army service certain considerations must be taken into

account so far as relates to eyesight, flatfoot and similar disabilities which have little or no effect on the functional capacity of the individual in civilian life.

The statement is made that youth who were disabled for a week or more during 1936 by tuberculosis, pneumonia, appendicitis or childbirth failed to receive hospital treatment to the extent of 30 per cent. Is there any evidence that all such cases should be hospitalized? Indeed, there is some question that all cases of childbirth should be hospitalized. Moreover, our rates for tuberculosis are steadily declining and in certain institutions there is already an oversupply of available beds for that disease. One wonders also how cases of childbirth fit into the youth program.

It will be observed that this report is essentially propaganda for a national health program and that the statement follows the pattern of some of the other pieces of propaganda that have emanated from that small group in Washington which has been endeavoring now for some years to fix on the nation its own concept, which demands revolution in medical care. It is amazing to find this stereotyped statement repeated again and again in the literature of welfare groups, which apparently unthinkingly copy from previous documents what is essentially propaganda rather than science. Indeed, the President himself has already intimated on several occasions that the so-called National Health Program and the Wagner Health Bill (which endeavors to translate that program into action) must be considered as cumbersome, extravagant and even grandiose.

No one would wish, more than the medical profession, to do the utmost that can be done to increase the health of American youth; in our approach to the problem we should base our opinions on scientific fact and avoid being enmeshed in the promotional literature of the propagandists.

OVARIAN PREPARATIONS

In the past few years a number of pure chemical compounds simulating endocrine preparations have been developed and found to possess potency in duplicating the physiologic reactions of the endocrine glands themselves. In spite of this progress there still appears to be a profitable sale for some products prepared from animal glands which have little, if any, demonstrable activity. These so-called endocrine preparations are often sold under proprietary names. Usually they contain a few grains of one or more of desiccated ovary, testis, corpus luteum, anterior lobe or thymus. Except for the thyroid and perhaps posterior pituitary, products derived from a few grains of desiccated glandular material have never been proved to be effective in endocrine therapy.

The Council on Pharmacy and Chemistry has repeatedly exposed such obsolete preparations as worthless and has warned the medical profession against the insidious advertising and sales policies of those firms

which promote them. Now it is gratifying to learn that the Food and Drug Administration has ruled against one type of these unscientific remedies:

NOTICE TO MANUFACTURERS OF PREPARATIONS OF OVARY:

There are on the market drug products in liquid form designated as "Ovarian Extract" or by some similar title. In some instances these products have been found not to contain the known therapeutically and physiologically active constituents of ovary, namely, those having estrogenic and progestational activities. The Food and Drug Administration is of the opinion that such inert or essentially inert preparations when sold as "Ovarian Extract," or under any other designation or under labeling which states or implies that such active principles are present, are both adulterated and misbranded as those terms are defined in the Federal Food, Drug and Cosmetic Act.

Numerous other "gland" products, relics from the ancient endocrine armamentarium, deserve similar condemnation.

TESTS FOR ALCOHOLIC INTOXICATION

The Committee on Tests for Intoxication of the National Safety Council, Chicago, has just released its 1939 report,¹ supplementing the report it issued in 1938.² These reports may well serve as a guide for any one interested in tests to determine whether or not a person is under the influence of alcohol. The committee recommends, among other things, that chemical tests of body fluids or breath, any one of which is satisfactory if properly performed, be used in all cases, civil or criminal, in which influence of alcoholic liquor is suspected; that ultimately each state adopt a state-wide system of standardized laboratories, preferably approved by state departments or courts, to test chemically for influence of alcohol; that each state consider adoption of legislation, as Indiana³ and Maine⁴ have already done, dealing with the use of evidence obtained from chemical tests, and that legal definitions in state laws of the phrase "under the influence," which is to be preferred to the term "intoxicated," be made more uniform. The committee is in accord with the interpretation of chemical tests for alcoholic intoxication recommended by the Committee to Study Problems of Motor Vehicle Accidents of the American Medical Association and adopted by the House of Delegates,⁵ namely that (1) a person with a concentration of less than 0.05 per cent by weight in the blood or its equivalent in urine, saliva or breath should not be prosecuted for driving while under the influence of alcoholic liquor; (2) a person with a concentration above 0.15 per cent should be considered as under such influence, and (3) a person with a concentration between 0.05 and 0.15 per cent should be prosecuted only when the circumstances

1. Installing Tests for Intoxication, 1939 Report of the Committee on Tests for Intoxication, National Safety Council, Chicago, read before the twenty-eighth National Safety Congress and Exposition, Atlantic City, N. J., Oct. 17, 1939.

2. Porter, H. H.: Chemical Tests for Intoxication, 1938 Report of the Committee on Tests for Intoxication, National Safety Council, Chicago, read before the Silver Jubilee Safety Congress and Exposition, Chicago, Oct. 12, 1938.

3. Laws of Indiana, 1939, ch. 48, art. V, sec. 54, paragraph (2).

4. Public Laws of Maine, 1939, ch. 273.

5. Proceedings, House of Delegates, American Medical Association, 1939, J. A. M. A. 112:2164-2166, 2175 (May 27) 1939.

and results of physical examination give definite confirmation that he is under the influence of alcohol. Any physician or other qualified person intending to perform chemical tests for alcoholic intoxication should acquaint himself with the legal phases of this problem, especially with regard to obtaining specimens without consent or by compulsion, as discussed in these reports⁶ and elsewhere.⁷

In setting up a testing program for dealing with drinking drivers of motor vehicles, the Committee on Tests for Intoxication believes certain requirements essential: (1) a special examination conducted by properly trained enforcement officers at the scene of the accident or violation and the results recorded on a special examination report form, preferably the Alcoholic Influence Report Form prepared by the National Safety Council; (2) chemical tests of body fluids or breath, by physicians, chemists or other qualified persons; (3) medical examinations especially in cases involving injury after accident or complaint of illness, and (4) proper preparation of the evidence for presentation in court by a physician or other person qualified by study or experience to give expert testimony in court when needed. The committee stresses the importance in such a program of developing the interest, understanding and cooperation of both the enforcement officials and the public.

Cooperative efforts of the various interested organizations should lead eventually to a substantial decrease in the number of unnecessary deaths attributed to drunken drivers.

Current Comment

NORMAN BAKER CONVICTED

On January 23 a jury found Norman Baker, notorious promoter of a cancer cure, guilty of using the United States mails to defraud. He and several of his associates were found guilty by a jury after one hour and thirty-nine minutes of deliberation. This is the same Norman Baker who promoted the old Hoxsey nostrum and who claimed that the American Medical Association had offered him a million dollars for his cancer cure. This is the Norman Baker who has constantly claimed that he was being persecuted by the American Medical Association. It is the same Baker who was ordered off the air with his station at Muscatine, Iowa, in June 1931, following publication of an article in *THE JOURNAL* exposing the manner in which that station was being used to entice sufferers from cancer to Muscatine. This is the Norman Baker who sued the American Medical Association for libel and who lost the verdict when the Association refused to retract and fought him in the courts. This is the Baker who established a radio station in Mexico, known as XENT, from which during many months he abused and

vilified and condemned the physicians of this country. Eventually Baker went to Arkansas and took over a defunct springs resort, where he set up an institution for the treatment of cancer. In his trial the chief defense offered included statements from some persons who testified that he and his associates had acted in good faith in advertising cures for cancer and other diseases through the mails and over the radio. Among the experts who testified on behalf of established medical science were Dr. Francis Carter Wood, of New York, and Dr. Max Cutler, of Chicago, who gave freely of their time and of their knowledge to the government. Following conviction by the jury, Baker was sentenced to four years' incarceration and fined \$4,000. A motion for a new trial was denied. The response of the jury and of the public in this case should encourage the Post Office Department to extend more widely and more vigorously its powers for the protection of the people against charlatanism in the treatment of disease.

PROFESSIONS THAT TEST OCULAR REFRACTION

Thacker¹ has recently analyzed 1,416 students at the University of Illinois divided into those whose vision was not normal with glasses examined within the last year by ophthalmologist or optometrist, those having incorrect vision with glasses not examined within the previous year, and the total number of students with incorrect vision. This study revealed in brief that 37.8 per cent of those examined by the optometrist and 19 per cent of those examined by the ophthalmologist did not have normal vision with glasses as determined by the Snellen test. There remained 32.3 per cent of those examined by the optometrist and 6.7 of those studied by the ophthalmologist who had defective vision with glasses. It was also found that practically three fourths of the students were unable to differentiate the ophthalmologist from the optometrist. Moreover, the average cost of the ocular examination and glasses was only about 10 per cent greater in the ophthalmologist group than in the optometrist group. It is concluded by Thacker that there is need for better medical regulations to determine the efficiency, registration and licensure of physicians representing themselves as specialists. He also points out that several of the schools of optometry which have raised their requirements to a four year course are attempting to teach pathology and diagnosis. In the light of existing circumstances, however, it would seem that much of this teaching is "futile." Eventually, he says, if the practice of optometry is to continue in the direction it is now taking, medical schools may find it necessary to absorb the teaching and control of the practice of this profession. Otherwise, when and if the professional standards and ethics for the practice of optometry reach a higher plane, the same cooperation as exists between the practice of medicine and dentistry may develop between the medical and optometry professions. Standards reached by the optometry profession, however, are apparently still far below those which would justify the confidence of the public or medical profession.

6. 1938 Report, *supra*, pp. 16-21; 1939 Report, *supra*, pp. 15-16.
7. Ladd, Mason, and Gibson, Robert W.: *The Medico-Legal Aspects of the Blood Test to Determine Intoxication*, Iowa Law Review, January 1939, pp. 193-267; "Scientific Gadgets in the Law of Evidence," Note, Harvard Law Review, December 1939, pp. 288-291.

1. Thacker, E. A.: A Study of the Professions Testing Ocular Refraction, *Am. J. Ophth.* 22: 1227 (Nov.) 1939.

ORGANIZATION SECTION

HEALTH RECOMMENDATIONS OF THE AMERICAN YOUTH COMMISSION

A recent bulletin, "A Program of Action for American Youth," presents the recommendations of the American Youth Commission of the American Council on Education. The director of this commission is Floyd W. Reeves, of Washington, D. C., and the commission includes the following educators and public leaders:

Will W. Alexander, Administrator, Farm Security Administration.

Clarence A. Dykstra, President, the University of Wisconsin.
Dorothy Canfield Fisher, author.

William E. Givens, Executive Secretary, National Education Association.

Henry I. Harriman, formerly Chairman of the Board, New England Power Association.

George Johnson, Director, Department of Education, National Catholic Welfare Conference.

Mordecai W. Johnson, President, Howard University.

Chester H. Rowell, Editor, *San Francisco Chronicle*.

William F. Russell, Dean, Teachers College, Columbia University.

John W. Studebaker, United States Commissioner of Education.

Henry C. Taylor, Director, Farm Foundation.

Miriam Van Waters, Secretary Superintendent, Reformatory for Women, Framingham, Mass.

Matthew Woll, Vice President, American Federation of Labor.

Robert E. Wood, Chairman of the Board, Sears, Roebuck & Company.

Owen D. Young, Vice Chairman, Chairman of the Board, General Electric Company.

George F. Zook, ex-officio President, American Council on Education.

The report covers such topics as youth and war, employment, health and education. The section on health follows:

HEALTH

The efficiency and soundness of the nation are weakened by failure to bring the physical condition of our young people—and of the whole population—to the highest practicable level. This necessary element of national strength becomes especially evident in time of crisis, though it should not have to wait for war to bring it to public attention.

The nation learned with dismay in 1917 and 1918 that a third of the drafted men were physically unfit for the army and presumably were handicapped to a greater or less extent even for civilian life. There is reason to believe that the physical fitness of the population has improved since 1918, in spite of the recent years of depression, but great advances could still be brought about by the application of present knowledge.

PREVENTABLE HANDICAPS

The commission need speak only of young people, and youth is recognized as a comparatively healthy period. Yet a number of severe, though preventable, physical disasters are most common in youth and early adulthood. The list includes tuberculosis, venereal diseases, appendicitis, rheumatic heart disease, and deaths of mothers in childbirth. Other less acute disorders common in youth, such as infections of the nose and throat, nutritional disturbances, postural defects and

dental decay, bring about immense losses in efficiency, for all of which society in one way or another has to pay the bill.

Moreover, youth is the period in which the foundations of future physical strength or weakness are laid and in which habits are formed that will later result in health or sickness.

The facilities now available to young people are wholly inadequate to ensure that the resources of modern science will be applied to the highest development of their health and physical fitness. These facilities are inadequate for health instruction and physical examination as well as for remedial care.

A recent survey made by the United States Office of Education disclosed that only 10 per cent of college students had ever had a course in hygiene in either secondary school or college. Few secondary schools give routine physical examinations, and it is probable that not more than 6 per cent of American youth have such examinations yearly.

The National Health Survey showed that, of the youth who were disabled for a week or more during 1936 by tuberculosis, pneumonia, appendicitis or childbirth, 30 per cent received no hospital treatment. Undoubtedly a vast number of minor illnesses go without medical attention and thus create a danger of more serious illness. At the same time an opportunity for health education is lost.

Physical recreation is universally recognized as a vitally important means of promoting good health. Healthful recreation, both physical and nonphysical, is essential to assure sound mental adjustment to life, especially in the difficult period of adolescence and early adulthood. But school athletic programs are still largely devoted to the intensive training of the few who are least in need of physical improvement. Camping tends to be restricted to youth in superior economic circumstances. There is a general lack of facilities for building and preserving a normal healthy physique, and the facilities that do exist are least available to the youth who are most in need of them.

These conditions place serious handicaps on several million young Americans in their personal lives. The same handicaps rest on the nation, which must depend on its coming generations for the success of its institutions and the security of its existence.

METHODS OF IMPROVEMENT

The remedy for these handicaps lies mainly in a nationwide public health program that will reach especially those elements in the population and those areas of the country which are economically at a disadvantage in providing for their own health. In order to be effective in a reasonable time, the program must be on a scale never before attempted in this country.

A national health program should be directed to the needs of citizens of all ages, but there may well be especial emphasis on youth. The schools can be of great service in providing health education and regular physical examinations and in giving physical training to all students, including those who have no especial athletic prowess. The principal agencies

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dealing with out of school youth should assume a similar obligation. Improved means must be found to reach young people not now served by these agencies. Public recreational programs, both physical and nonphysical, must be greatly expanded. They have been regarded too long as a public service in the luxury class. The contribution they can make to a higher level of physical fitness and to the preservation of morale in times of stress must now receive general recognition.

Adequate medical care for the whole population is a major necessity which is made more urgent by the unfortunate crisis in world affairs. Facilities must be provided where they are now lacking and increased where they are inadequate. Ways must be found to bring the cost of medical care within the means of the large section of the population that cannot afford to pay the whole cost under the present organization of medical service. Consideration should be given to the best method of distributing the cost of illness and medical care for that large group of normally self-supporting persons who are able to meet the average cost of average illness but who may be individually unable, out of current income or savings, to meet the emergency cost of serious or protracted illness. For the poor the provision of adequate medical

care must be accepted as a public obligation, since in the long run the cost of neglect is greater than the cost of prevention or cure and falls on the community as a whole.

The commission is convinced that any public health program which will effectively strengthen the nation must have some financial support from the federal government. The inequalities among the states in their financial ability to support social services are so great that the improvements necessary for national security cannot be assured by reliance on only state and local resources. The program should, however, operate mainly through the states and through local agencies that are best able to judge of local needs and locally acceptable methods.

Science now has weapons that can be used to destroy some of the great enemies that have lowered the vitality of men and women in past generations. The nation cannot afford to have these possible advantages confined to the more fortunate. Every illness prevented and every young man or woman set on the road to a healthy, useful life are gains far beyond their cost in dollars. No time could be more appropriate than the present to take every advantage of the opportunities for national improvement which have been made available by advances in medical science.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 2420 has passed the Senate, authorizing the Secretary of the Interior to make or cause to be made annual inspections and investigations in coal mines to obtain information relating to health and safety conditions, accidents, and occupational diseases therein. H. R. 5757 has passed the House, declaring it to be unlawful to deposit in the mails or to introduce into commerce by any means any magazine, periodical or other publication unless such publication contains conspicuously printed on one of its pages the name and address of the publisher thereof, the place of publication and the names of the editor, managing editor, business manager and owner or owners thereof and, if such publication is published by a corporation, the name of each officer of the corporation. These requirements would be imposed on medical journals, if the bill is enacted.

Bills Introduced.—S. Con. Res. 34, submitted by Senator Wagner, New York, proposes to establish an Advisory Council on Employment Security to study and report on the subject of unemployment insurance, including consideration of the coordination of unemployment insurance with other forms of social insurance. S. 3125, introduced by Senator Pepper, Florida, proposes to authorize an appropriation of \$100,000 to enable the Surgeon General of the Public Health Service to conduct researches, investigations, experiments and studies relating to the cause, diagnosis and treatment of the common cold, "flu" and pneumonia, with a view to the development and prompt widespread use of the most effective methods of prevention, diagnosis and treatment of such diseases. S. 3127, introduced by Senator Sheppard, Texas, provides that in the appointment of medical officers of the Regular Army, reserve medical officers between the ages of 32 and 40 years who are qualified for appointment subject to examination. S. 3131, introduced by Senator Hill, Alabama, proposes to extend the benefits of the United States Employees' Compensation Act to members of the Officers' Reserve and of the Enlisted Reserve Corps of the Army who are physically injured in line of duty while performing active duty or engaged in authorized training between the dates of Feb. 28, 1925, and July 15, 1939. S. 3161 and S. 3165, both introduced by Senator Davis, Pennsylvania, provide that all reserve officers of the Army called or ordered to active duty by the government,

who suffer or have suffered disability or death in line of duty from disease or injury while so employed, shall be entitled to the same pension, compensation, retirement pay and hospital benefits as officers in the Regular Army with corresponding grades and length of service. S. 3170, introduced by Senator Murray, Montana, proposes to enact the American Youth Act. The bill proposes, among other things, that all young persons officially enrolled in a course of study in a professional or technical school of a university, such as a school of medicine, law, dentistry or engineering, who would, without financial aid, be unable to devote full time to the pursuit of such course of study, shall be eligible to receive a sum of money sufficient to enable such person to pay for personal board and lodging, books and laboratory equipment, and school fees. H. Con. Res. 40, submitted by Representative Carlson, Kansas, proposes to create a Joint Committee on Social Security to make a full and complete study of existing social security legislation. H. R. 7727, introduced by Representative Hendricks, Florida, proposes to increase and equalize the pensions of the disabled ex-service men of the Regular Establishment whose disabilities were service connected. H. R. 7925, introduced, by request, by Representative Rankin, Mississippi, proposes to liberalize benefits for disabled veterans and the dependents of deceased veterans. The bill provides, among other things, that any person who served in the military or naval forces of the United States during a recognized campaign or expedition, and who was honorably separated from such service, shall be granted hospitalization and domiciliary care by the Veterans' Administration subject to the same restrictions and limitations as are now applicable to World War Veterans. H. R. 7927, introduced by Representative Voorhis, California, provides for a statutory award of \$10 a month to any World War veteran who was wounded, gassed, injured or disabled by any instrumentality of war in a zone of hostilities. H. R. 7938, introduced, by request, by Representative Lesinski, Michigan, proposes to amend the Veterans' Regulations so as to provide that if a disabled person is shown to have had a service-connected tuberculosis of a pensionable degree which has, in the judgment of the Administrator of Veterans' Affairs, reached a condition of complete arrest, he shall be entitled to a monthly pension of not less than \$50. H. R. 7943, introduced by Representative Peterson, Florida, proposes that any World War veteran suffering from any mental or physical disability

or disabilities of a permanent character which totally incapacitates him for the performance of manual labor so as to render him unable to earn a support shall be rated as permanently and totally disabled for compensation and pension purposes. H. R. 7944, introduced by Representative Peterson, Florida, proposes to provide for a liberalized definition of permanent total disability, for pension purposes, on the basis of the inability of the individual veteran to earn a support by manual labor. H. R. 7946, introduced by Representative Routzohn, Ohio, proposes to amend the Veterans Regulations to provide that a disability, injury or disease will be held to have resulted from misconduct when it is due to felonious misconduct. H. R. 7971, introduced by Representative Mundt,

South Dakota, proposes to prevent the pollution of the navigable waters of the United States. H. R. 7984, introduced by Representative Randolph, West Virginia, proposes to grant pensions to certain American Red Cross ambulance drivers of the World War. H. R. 8118, introduced by Representative O'Day, New York, proposes to amend the Social Security Act so as to bring within its unemployment and old-age provisions employees of a corporation, community chest, fund or foundation, organized and operated exclusively for charitable, scientific, literary or educational purposes, or for the prevention of cruelty to children or animals, subject to a specific exemption in favor of employees of churches, synagogues or other institutions of worship.

OFFICIAL NOTES

ADDRESSES BY OFFICIAL STAFF

DR. PAUL C. BARTON:

February 1—American Social Hygiene Association, Chicago.
February 10—Public Health Nurses, American Red Cross, Chicago.

DR. W. W. BAUER:

February 5—High School, Escanaba, Mich.
February 5—Service Club, Escanaba, Mich.
February 5—Public meeting, Escanaba, Mich.
February 15—Women's Field Army, American Society for the Control of Cancer, Louisville, Ky.
February 20—Peniel Community Center Forum, Chicago.
February 26—Jewish Women's Council, Chicago.
February 27-28—Joint Committee of the National Education Association and the American Medical Association, St. Louis.
February 29—American Association of School Administrators, St. Louis.

DR. MORRIS FISHBEIN:

February 1—Middle Atlantic Lumberman's Association, Philadelphia.
February 2—Promotional dinner, Charlotte Memorial Hospital, Charlotte, N. C.
February 6—Cincinnati Academy of Medicine, Cincinnati.
February 8—Illinois State Museum's Popular Science Series, Springfield, Ill.
February 11—National Conference on Medical Service, Chicago.
February 20—Service Clubs, Streator, Ill.
February 25—New York Committee of National Jewish Hospital (Denver), New York.
February 26—Town Hall, Syracuse, N. Y.

February 28—Western Electric, Morton High School, Chicago.

February 29—Noon Hour Book Talk, Public Library, Chicago.

February 29—Association of Medical Students, University of Chicago, Chicago.

DR. R. G. LELAND:

February 11—National Conference on Medical Service, Chicago.
February 19—Nineteenth Century Woman's Club, Oak Park, Ill.
February 24—Minnesota County Secretaries Conference, St. Paul.

DR. PAUL A. TESCHNER:

February 12—Mayfair Women's Club, Chicago.
February 15—Allen County Tuberculosis Association, Fort Wayne, Ind.
February 16—High School, Arlington Heights, Ill.
February 18—South Shore Community Church, Chicago.
February 20—Y. M. C. A., Chicago.
February 26—Marquette University School of Medicine, Milwaukee.

DR. NATHAN B. VAN ETEN:

February 7—Regional Conference of Social Hygiene, New York.
February 12—Federation of State Medical Boards of the United States, Chicago.
February 13—Council on Medical Education and Hospitals, Chicago.
February 14—South Side Medical Assembly of Chicago.
February 21—First District Dental Society of New York, New York.

WOMAN'S AUXILIARY

Nebraska

An auxiliary to the Adams County Medical Society was organized in Hastings November 6. Mrs. J. W. Brown was elected president.

Minnesota

Dr. W. A. Coventry, Duluth, spoke at a luncheon meeting, following the regular meeting of the board of directors of the auxiliary to the Minnesota State Medical Association in St. Paul October 12. Mrs. A. C. Baker, president, discussed plans for the year to the thirty-two members of the board present.

The auxiliary to the Ramsey County Medical Society recently remodeled the kitchen at the Children's Home Society, a non-sectarian home for underprivileged children in St. Paul.

Washington

Members of the auxiliary to the Walla Walla County Medical Society are cooperating with the Women's Field Army of the American Society for the Control of Cancer in arranging public meetings on cancer in Walla Walla.

Mrs. Luman S. Roach, president of the auxiliary to the Washington State Medical Association, spoke at the December meeting of the auxiliary to the Yakima Medical Society.

Wisconsin

The auxiliary to the Brown-Kewaunee-Door County Medical Society met at the Bellin Memorial Hospital in Green Bay November 8. Auxiliary members came from Appleton, Denmark, Pulaski, Forest Junction, Oconto, Fond du Lac and Oshkosh to attend the meeting. Speakers were Mrs. Rollo K. Packard, president of the auxiliary to the American Medical Association, Mrs. F. W. Pope, president of the auxiliary to the State Medical Society of Wisconsin and Mrs. Eben J. Carey, chairman of the Hygeia committee of the auxiliary to the American Medical Association.

The auxiliary to the Winnebago County Medical Society has placed Hygeia in ninety-six schools in Winnebago County. At a recent meeting in Oshkosh Miss Lydia Bouressa of the Visiting Nurse Association in Neenah spoke on public health work.

Medical News

MEDICAL NEWS

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

JOUR. A. M. A.
FEB. 3, 1940

ARKANSAS

Norman Baker Sentenced to Prison—Denied New Trial.—Norman Baker, founder of hospitals at Muscatine, Iowa, and Eureka Springs, and one time candidate for governor and United States Senator in Iowa, was sentenced to four years in prison and fined \$4,000 following his conviction on a charge of using the mails to defraud in advertising a "cancer cure," according to the New York Times January 26. R. A. Bellows, superintendent of the Baker Hospital in Eureka Springs, was sentenced to two years and Dr. Johnson L. Statler, technical adviser, was sentenced to a year and a day. As noted in THE JOURNAL Sept. 30, 1939, Baker surrendered to the U. S. marshal in Arkansas on a federal indictment charging him with using the mails to defraud. The present sentence and fine is the outcome of this indictment. The action concluded a sixteen day trial. Motion for a new trial was denied. Dr. Orville L. Beatty, chief of staff at the Arkansas hospital, was acquitted. In June 1938 Baker moved his "cancer cure" business to Arkansas; in August 1937 he served a day in the Muscatine county jail and paid a \$1,000 fine on a charge of practicing medicine without a license. For a number of years Baker ran a "sanatorium," a radio station and a magazine and newspaper in Muscatine. Baker's permit to operate a station in Muscatine was canceled in 1931.

CALIFORNIA

Society News.—The Los Angeles Surgical Society was addressed January 4 by Drs. Conrad J. Baumgartner on "Infections of the Neck"; Harold R. Witherbee, "Perforated Peptic Ulcer in Meckel's Diverticulum," and Hans von Briesen, "Gross Physiological Principles of Head Injury Treatment."—The San Francisco County Medical Society was addressed January 1 by Mr. Hartley F. Peart and Dr. Edward W. Twitchell on "The New Epilepsy Law—Its Implications in Relation to Driving Motor Vehicles," and Dr. Hans Lissner, "Some Clinical Experiences with the Newer Sex Hormones."—The Shasta County Medical Society sponsored a clinical conference in Redding recently; the speakers were Dr. John W. Cline, San Francisco, on "Preoperative Preparation and Postoperative Care" and "Use of X-Rays in Diagnosis of Acute Abdominal Conditions" and Dr. Chester L. Cooley, San Francisco, "Obstetrical Analgesia" and "Obstetrical Bleeding."

COLORADO

Society News.—At a meeting of the Pueblo County Medical Society in Pueblo January 16 the speakers were Drs. William H. Halley, Denver, on "Public Relations Program for the Society" and Mr. Harvey T. Sethman, "Review and Preview of the State Society's Scientific Programs."—**Personal.**—Dr. Edwin L. Foster, Arvada, was honored by the Clear Creek Valley Medical Society at its annual dinner meeting January 10 in Denver in recognition of his completing this year fifty years in the practice of medicine, forty of which have been spent in Colorado. Dr. Foster was elected president of the society at this meeting.

DISTRICT OF COLUMBIA

Annual Post-Graduate Clinics.—The eighth annual post-graduate clinics of the George Washington University Medical School and the annual reunion banquet of the George Washington Medical Society will be held February 16-17. This year for the first time the clinics are occupying two days instead of one. The clinics will be held in the medical school building with a luncheon on the first day while the banquet will be held in the main ballroom of the Mayflower Hotel Saturday night. Out-of-town speakers will include Drs. Alfred C. Beck, professor of obstetrics and gynecology, Long Island College of Medicine, Brooklyn; Willard R. Cooke, professor of obstetrics and gynecology, University of Texas School of

Medicine, Galveston, and John Cooke Hirst, assistant professor of obstetrics, University of Pennsylvania School of Medicine, Philadelphia.

IDAHO

Iowa Teachers on State Society Program.—Members of the faculty of the State University of Iowa College of Medicine, Iowa City, will participate in the annual session of the Idaho State Medical Association in Sun Valley September 11-14. Included will be: Drs. Ewen M. MacEwen, dean and professor of anatomy; Clarence E. Van Epps, professor of neurology; Fred M. Smith, professor of theory and practice of medicine; Nathaniel G. Alcock, professor of orthopedic surgery, and Arthur Steindler, professor of orthopedic surgery.

ILLINOIS

Study of Storage Battery Industry.—The state department of public health has begun a study of the storage battery industry in Illinois to determine the risks of employees. The basis of the study was the recent collection of material indicating danger of lead poisoning to employees in certain storage battery plants. The study will include medical examinations of employees and an engineering study of the plants themselves. Where evidence of lead poisoning is found, the engineering studies will determine the points in the manufacturing process where exposure exists. At the end of the investigation of each plant a report will be made to the manufacturer pointing out any opportunity of employee hazard and recommending methods of eliminating such hazard, according to a release from the health department.

CHICAGO

Personal.—Dr. Joseph C. Beck has been appointed associate dean of education at the Illinois Eye and Ear Infirmary and will devote half his time to supervision of graduate courses. Dr. Peter C. Kronfeld was recently appointed full time dean of education at the infirmary.

Branch Meetings.—The North Shore Branch of the Chicago Medical Society will devote its meeting February 6 to a symposium on peripheral vascular disease. The speakers will include Drs. Louis G. Herrmann, Cincinnati, on "Pathologic Physiologic Basis for the Management of Peripheral Vascular Disease"; Frank V. Theis, "Thrombo-Angiitis Obliterans: Pathologic-Physiologic Studies on Smoking and the Treatment of the Disease," and Samuel Perlow, "Value of Prostigmine in the Treatment of Peripheral Vascular Disease."

Asa Bacon Library to Be Dedicated.—The Asa S. Bacon Library will be dedicated at the American Hospital Association February 12. The library, formerly the property of the American Conference on Hospital Service, has belonged to the hospital association since July 1930. The space assigned to it has been remodeled and by action of the board of trustees of the association the library has been designated the "Bacon Library" in appreciation of a lifetime of service which Asa S. Bacon has given to hospital service. Forty-five hundred packages of books are sent to more than 3,200 hospitals and their personnel each year; 300 new books and the issues of fifty-two different magazines are added each year. Mr. Bacon has been superintendent of Presbyterian Hospital for forty years.

INDIANA

Society News.—The Indianapolis Medical Society was addressed January 16 by Drs. Albert Murray DeArmond and Ezra Vernon Hahn on "Convulsive Attacks, Their Diagnosis and Treatment"; Larue D. Carter, "Vascular Cerebral Accidents and Their Management," and Robert L. Glass, "Intra-spinal Tumors." Dr. Alfred W. Adson, Rochester, Minn., discussed "Pain and Its Control" before the society January 23.—Dr. Gordon F. McKim, Cincinnati, discussed "Etiologic Factors in Pylonephritis" before the Wayne County Medical Society in Richmond January 11.—At a meeting of the Fort Wayne Medical Society, Fort Wayne, January 16, Dr. Harry A. Towsley, Ann Arbor, Mich., spoke on "The Acute Exanthematous Diseases."

LOUISIANA

Society News.—A symposium on pneumonia was presented before the Franklin Parish Medical Society at Winnsboro recently by Drs. John R. Schencken, Robert H. Bayley and Joseph O. Weilbacher Jr., all of New Orleans.—At a meeting of the New Orleans Gynecological and Obstetrical Society with the Mercy Hospital staff recently the speakers

were Drs. Max M. Green on "Upper Urinary Tract Infection"; Philips J. Carter, "Urethral Caruncle"; Rupert E. Arnell, "Granuloma Venereum of the Cervix," and William F. Guerriero, Monroe, "Criteria for the Management of Toxemia of Pregnancy."—The Lafourche Valley Medical Society was addressed in Houma recently by Drs. Carlo J. Tripoli, New Orleans, on "Treatment of Lobar Pneumonia" and Harry Vernon Sims, New Orleans, "Sacral Analgesia in Gynecology."—The Orleans Parish Medical Society was addressed recently by Dr. Ansel M. Caine, New Orleans, on "Here and There in Anesthesia" and Dr. John A. Trautman, New Orleans, "Hyperpyrexia—Its Indications and Complications; Evaluation of Results Based on 5,500 Fever Sessions."

MASSACHUSETTS

Summer Courses in Public Health.—The department of biology and public health, Massachusetts Institute of Technology, Cambridge, is offering summer programs in public health, school health and health education, July 21-August 21. The courses lead to the certificate in public health and will cover communicable diseases, principles of sanitation, public health administration and vital statistics. Registration will be limited. Eligible candidates will be accepted in the order in which their applications for admission are received, all applications to be in by May 15. Notification of acceptance will be sent to the applicant not later than June 1. Tuition is \$120 and registration fee \$5 a summer for those who register for the entire program, consisting of four summers. Separate tuition fees are set for individual courses.

Society News.—Dr. John S. Hodgson, Boston, addressed the Essex North and South District medical societies in Danvers January 3 on head injuries.—The Boston Surgical Society devoted its session January 17 to a clinical program; among those participating were Drs. Charles G. Mixter on "Cholangiography During Operation" and Samuel Gilman, "Use of the Newer Vasoconstrictor Agents During Spinal Anesthesia."—At a meeting of the Pentucket Association of Physicians in Haverhill February 8 Dr. Fuller Albright, Boston, will discuss "Studies in Endocrinology." The association was addressed January 11 by Drs. John L. Fromer, Brookline, on "Relation of Allergy to the General Practitioner" and John W. Norcross, Boston, "The Vitamins and Avitaminosis."—A symposium on the treatment of meningitis will be presented before the New England Pediatric Society February 7 by Drs. Josephine B. Neal, New York, and Maxwell Finland and Leroy D. Fothergill, both of Boston.

MICHIGAN

Changes in Health Officers.—Dr. Rolla J. Shale, Akron, Ohio, has been placed in charge of the health unit for Ontonagon and Baraga counties, filling the vacancy caused by the resignation of Dr. Pearl A. Toivonen in August. Dr. Alexander M. Campbell, Grand Rapids, has been serving as temporary director.

Society News.—Dr. Lynn A. Ferguson, Grand Rapids, discussed "Diagnosis and Office Management of Common Rectal Disorders" before the Muskegon County Medical Society January 26 in Muskegon.—Dr. William F. Braasch, Rochester, Minn., discussed "Hypertension with the Surgical Kidney" before the Wayne County Medical Society, Detroit, January 15.—The West Side Medical Society, Detroit, was addressed January 18 by Drs. Robert L. Schaefer on "Endocrine Treatment of the Undescended Testis"; Arnold J. Lehman, "Medical-Legal Importance of Chemiluminescence for Demonstrating the Presence of Blood," and Plinn F. Morse, "Diagnosis Before and After Pathologic Examinations, with Cases to Illustrate."—Dr. Carey P. McCord, Detroit, addressed the Genesee County Medical Society in Flint January 24 on silicosis.—Dr. Russell D. Herrold, Chicago, addressed the Kalamazoo Academy of Medicine January 16 on "Management of Urinary Infections with Chemotherapy."

MINNESOTA

The E. Starr Judd Lecture.—Dr. Edward D. Churchill, John Homans professor of surgery, Harvard Medical School, Boston, will deliver the seventh E. Starr Judd Lecture at the University of Minnesota, Minneapolis, March 14. His subject will be "Surgery of the Lungs."

Course in Training for Hospital Librarians.—The division of library instruction of the University of Minnesota announces a course for the training of hospital librarians during

the spring quarter beginning April 1. The course covers the administration of hospital libraries, book selection for patients, work with mental patients and medical reference; in addition it includes six weeks' internship. At present this is the only course in hospital librarianship leading to a degree in an accredited library school, it was stated. All students who take this course for credit receive a special certificate authorized by the regents of the university. Inquiries for further information should be addressed to Mr. Frank K. Walter, librarian, University of Minnesota, Minneapolis.

MONTANA

Meningo-Encephalitis Epidemic.—Thirty-nine cases of meningo-encephalitis occurred in and around Anaconda between October 13 and December 4, according to *Public Health Reports*, December 29. There were two deaths.

NEW JERSEY

Society News.—Dr. Edward H. Dennen, New York, addressed the Academy of Medicine of Northern New Jersey, Newark, January 18 on "Choice of Instrument in Delivery with Forceps." Dr. James W. White, New York, addressed the section on eye, ear, nose and throat January 8 on "Variations in Congenital Anomalies" and Dr. Ernest H. Gaither, Baltimore, the section on medicine and pediatrics January 9 on "Modern Aspects of Peptic Ulcer Therapy."—Dr. George Harlan Wells, Philadelphia, addressed the Atlantic County Medical Society, Atlantic City, January 12 on "Cause and Treatment of Congestive Heart Failure."

Memorial to Dr. Hagerty.—A meeting in memory of the late Dr. John F. Hagerty, Newark, was held at the Academy of Medicine of Northern New Jersey January 23. The principal address was made by Dr. Frank H. Lahey, Boston, on "Carcinoma of the Colon and Rectum; Early Diagnosis, Surgical Management and End-Result." Other speakers were the Rev. James F. Kelley, president of Seton Hall College; Dr. Edward Mathias Zeh Hawkes, Newark, president of the Medical Society of New Jersey, and Dr. Bernard A. O'Connor, Newark, who presented a memorial plaque. Dr. Charles M. Robbins, Newark, president of the academy, accepted the plaque.

NEW YORK

Society News.—Dr. Conrad Wesselhoeft, Boston, addressed the Medical Society of the County of Albany, Albany, January 24 on "Advances in Management of Infectious Diseases."

Lectures at Cooperstown.—The Mary Imogene Bassett Hospital, Cooperstown, is presenting Friday afternoon lecture-clinics throughout the winter. The program for the remainder of the series is as follows:

- Dr. George M. MacKenzie, Puerperal Infections, February 9.
- Robert M. Pike, Ph.D., Laboratory Aids in the Diagnosis and Management of Acute Infectious Disease, February 16.
- Dr. MacKenzie, Therapeutic Use of Sulfanilamide and Sulfapyridine, February 23.
- Dr. John H. Powers, Urologic Emergencies, March 1.
- Dr. David M. Kydd, Nephritis, March 8.
- Dr. Monroe A. McIver, Intestinal Obstruction, March 15.
- Dr. Floyd J. Atwell, Toxemias of Pregnancy, March 22.
- Dr. Marjorie F. Murray, Infant Feeding, March 29.
- Dr. Pike, Etiology and Epidemiology of Influenza, April 5.
- Dr. Charles C. McCoy, Geriatrics, April 5.
- Dr. McIver, Surgical Treatment of Acute Cholecystitis, April 12.
- Dr. McCoy, Disease of the Gallbladder, April 17.

New York City

Personal.—Dr. Alexis Carrel has joined the staff of the French ministry of health for the duration of the war, according to the *British Medical Journal*.—Dr. Smith Ely Jelliffe has been made an honorary member of the Dutch Society of Psychiatry and Neurology.

Society News.—Drs. William F. Rienhoff Jr., Baltimore, and Béla Schick addressed the Brooklyn Thoracic Society January 19 on "Bronchogenic Carcinoma and Its Surgical Treatment" and "Childhood Tuberculosis" respectively.—Drs. Wheelan D. Sutliff and Josephine B. Neal addressed the Medical Society of the County of Kings January 16 on "Sulfapyridine Therapy for Pneumonia" and "Chemotherapy in Meningitis" respectively. Dr. Daniel A. McAteer, Brooklyn, was installed as president and made his inaugural address on "The Doctor's Dilemma."—Dr. Wilder G. Penfield, Montreal, addressed the Medical Society of the County of New York at its annual meeting January 22 on "Diagnostic Aids in the Surgery of the Brain." Dr. Walter P. Anderton was installed as president.

OHIO

Society News.—Dr. James M. Ruegsegger, Cincinnati, addressed the Montgomery County Medical Society, Dayton, January 5 on recent developments in the treatment of pneumonia.—Drs. Frederic Schreiber and Wyman C. C. Cole, Detroit, addressed a special joint meeting of the Academy of Medicine of Cleveland with the pediatric section of the academy January 26 on "Clinical Significance of Asphyxia" and "Etiologic Factors in Neonatal Asphyxia" respectively.—Dr. Russell L. Haden, Cleveland, addressed the Academy of Medicine of Cincinnati January 16 on "Use of Liver and Iron in the Treatment of Anemia." Dr. Francis Carter Wood, New York, addressed the academy January 23 under the auspices of the cancer control council of the Public Health Federation on "Underlying Principles of Radiation Therapy and Their Practical Application in Treating Cancer." The society will present a program February 6 on "The Place of Group Practice in American Medicine." The speakers will be Drs. Morris Fishbein, Chicago, Editor of THE JOURNAL, and Kingsley Roberts, New York.

OKLAHOMA

Statewide Cancer Program.—The cancer committee of the Oklahoma State Medical Association in cooperation with the state health department and the Women's Field Army of the American Society for the Control of Cancer has arranged a course of instruction on cancer to be given in forty cities during February and March. The instructor will be Dr. James Samuel Binkley of the staff of Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York. The series will begin in Miami February 5 and end in Weatherford March 29. Dr. Wilbur F. Keller, Oklahoma City, is chairman of the cancer committee and the other members are Drs. Paul B. Champlin, Enid, and Ralph A. McGill, Tulsa.

PENNSYLVANIA

Society News.—Dr. Daniel M. Brumfiel, Saranac Lake, N. Y., addressed the Northampton County Medical Society January 19 on silicosis.—Dr. James M. Gaffney, Cresson, addressed the Blair County Medical Society, Altoona, January 23 on "Collapse Therapy in Pulmonary Tuberculosis."

New Commandant at Carlisle Barracks.—Brig. Gen. Roger Brooke, now commandant of Letterman General Hospital, San Francisco, will be transferred May 1 to become commandant of the U. S. Army Medical Field Service School at Carlisle, it is reported. He will succeed Col. Herbert C. Gibner, who has been in charge since 1937.

Philadelphia

Personal.—Dr. Arthur P. Keegan has been appointed chief police surgeon of Philadelphia to succeed Dr. Hubley R. Owen, who recently became director of health.

Annual Thomas Lecture on Urology.—Justina Hill, Ph.D., associate in urology, Johns Hopkins University School of Medicine, Baltimore, delivered the annual B. A. Thomas Oration of the Philadelphia Urological Society January 22 on "Some Recent Contributions of Bacteriology to Urology."

Society News.—Dr. Harry Eagle, Baltimore, addressed the Eastern Pennsylvania Chapter of the Society of American Bacteriologists January 23 on "Immunologic and Chemotherapeutic Studies in Syphilis"; Dr. Charles A. Jones, Fred Boerner, V.M.D., and Marguerite Lukens, A.B., presented a paper on "Simplified Microscopic and Macroscopic Flocculation Tests for the Diagnosis of Syphilis."—Dr. Temple S. Fay gave his presidential address before the Philadelphia Neurological Society January 26 on "Pain and Its Response to Measures of Refrigeration."—Dr. Francis W. Sinkler was elected president of the Aid Association of the Philadelphia County Medical Society at its annual meeting January 8; Dr. Henry P. Brown Jr. is secretary.

Pittsburgh

Hospital News.—Dr. Fred L. Adair, Chicago, gave an address at the Elizabeth Steel Magee Hospital January 17 on "Indications and Contraindications for Cesarean Section."

Society News.—Dr. William B. McLaughlin addressed the Pittsburgh Pediatric Society January 10 on orthopedic problems in pediatric practice.—Dr. Julius M. Rogoff addressed the Pittsburgh Medical Forum January 13 on "Endocrine Studies in Hypertension."

RHODE ISLAND

Public Health Meeting.—The fourth annual meeting of the Rhode Island Public Health Association was held in Providence January 23 with tuberculosis control as the topic of discussion. The guest speakers were Drs. Alton S. Pope, Boston, director of the division of tuberculosis in the Massachusetts Health Department; Herbert R. Edwards, director of the tuberculosis bureau, New York City Department of Health, and Thomas B. McKneely of the U. S. Public Health Service. Dr. Claude C. Pierce, regional consultant of the public health service, was the principal speaker at a luncheon.

WASHINGTON

Personal.—Dr. George H. Johnson, Vancouver, has been appointed health officer of Clark County to succeed Dr. John A. Kahl, Vancouver.—Dr. Cedric E. M. Tuohy, Snohomish, has been appointed medical superintendent of the Aldercrest Sanatorium, Snohomish, and the Snohomish County Hospital, Monroe.—Dr. Thomas C. Baldwin, Port Orchard, has been named health officer of Kitsap County.

Society News.—Dr. Edwin E. Osgood, Portland, Ore., addressed the Spokane County Medical Society, Spokane, January 11 on "Differential Diagnosis and Treatment of Anemias."—Drs. Raymond L. Zech and James M. Bowers, Seattle, addressed the Cowlitz County Medical Society, Longview, December 20 on "Upper Abdominal Surgery" and "Diagnosis and Treatment of Anemia" respectively. Dr. William Norman Moray Girling, Longview, presented a case of conical cornea.—Drs. Robert L. Benson and Frank Perlman, Portland, Ore., addressed the Yakima County Medical Society, Yakima, December 11 on "Recent Developments in the Field of Allergy" and "Therapeutics" respectively.

PHILIPPINE ISLANDS

Infantile Paralysis Closes Manila School.—The American school in Manila was closed January 16 because of the prevalence of infantile paralysis, the New York Times reported January 17. Various meetings have been suspended and clubs have closed their swimming pools. Health authorities said that these measures were only precautionary and that the disease was not epidemic.

PUERTO RICO

University News.—The School of Tropical Medicine of the University of Puerto Rico under the auspices of Columbia University, New York, conducted an informal ceremony on the fifth anniversary, Nov. 1, 1939, of the death of Dr. Bailey K. Ashford. A wreath was laid at the foot of a bust at the medical school and addresses were made by José M. Gallardo, LL.D.; Juan B. Soto, Ph.D.; Drs. Eduardo Garrido Morales and Jose C. Ferrer and Donald H. Cook, Ph.D. Dr. Ashford went to Puerto Rico as an army surgeon in 1898 and except for short periods of work elsewhere spent the remainder of his life on the island. His work was largely responsible for the establishment of the school of tropical medicine, the speakers pointed out, and when it was founded in 1926 he became professor of tropical medicine and mycology.

GENERAL

Annual Conference on Radiology.—The tenth annual conference of the American College of Radiology will be held at the Palmer House, Chicago, February 11. The annual meeting of the teachers of clinical radiology will be held in connection with the conference February 11 under the sponsorship of the commission on education of the college. The program will include a symposium on radiology in the medical school curriculum, ending with a discussion on "What Facilities Are Available for Graduate Teaching of Visiting Radiologists from South America?" Monday will be devoted to a meeting of the chancellors of the American College of Radiology.

Deaths in Principal Cities.—The Bureau of the Census reports that 429,419 persons died in eighty-eight major cities in the United States in 1939 as compared with 424,348 in 1938, an increase of 1 per cent. Infant deaths decreased from 27,159 in 1938 to 25,713 in 1939. These figures were compiled from weekly telegraphic reports received from departments of health in the cities listed. Because of the impracticability of making accurate estimates of city populations, total death rates were not computed. The weekly death totals for 1939 were consistently lower than the average totals for the preceding three years from January to July, but during the rest of the year they were closely similar.

Special Society Elections.—Dr. John Staige Davis, Baltimore, was elected president of the Southern Surgical Association at the annual meeting in Augusta, Ga., in December. Drs. William Lowndes Peple, Richmond, Va., and Worcester A. Bryan, Nashville, Tenn., were elected vice presidents and Edward W. Alton Ochsner, New Orleans, was reelected secretary. The 1940 meeting will be at Hot Springs, Va. Dr. Alfred J. Brown, Omaha, was elected president of the Western Surgical Association at its annual meeting in Los Angeles in December. Drs. William M. Mills, Topeka, Kan., and Fred F. Attix, Lewistown, Mont., were made vice presidents and Dr. Albert H. Montgomery, Chicago, was reelected secretary. The next meeting will be in Topeka.

Meeting of Southern Obstetricians.—The annual meeting of the South Atlantic Association of Obstetricians and Gynecologists will be held in Richmond, Va., February 9-10 at the Jefferson Hotel. The guest speakers will be Drs. Philip F. Williams, Philadelphia, and Arthur H. Curtis, Chicago. Other speakers will be:

- Dr. Robert Ferguson, Charlotte, N. C., A Review of Data on 600 Women Tested for Patency of the Fallopian Tubes.
- Dr. John Randolph Perdue, Miami, Fla., The Postpartum and Post-operative Bladder.
- Dr. Francis Bayard Carter, Durham, N. C., Late Toxemias of Pregnancy with Analysis of Postmortem Findings.
- Dr. Robert B. Greenblatt, Augusta, Ga., The Estrogenic Activity of Diethylstilbestrol.
- Dr. Richard B. Dunn, Greensboro, N. C., Asphyxia Neonatorum.
- Dr. Gerry R. Holden, Jacksonville, Fla., The Use of Radium in Treating Menopausal Hemorrhages of Benign Origin.
- Dr. Charles J. Andrews, Norfolk, Va., The Third Stage of Labor with a Description of a New Method of Expression of the Placenta.

Howard W. Blakeslee, New York, science editor of the Associated Press, will be the speaker at a banquet Friday evening. The president of the association is Dr. Robert E. Seibels, Columbia, S. C.

Symposium on Education and Health.—The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, which was reorganized in 1939, will sponsor a symposium on "How Can Education Improve the Nation's Health?" as part of the annual meeting of the American Association of School Administrators, a department of the National Education Association, in St. Louis February 28. The program is as follows:

- Alexander J. Stoddard, superintendent of schools, Philadelphia, Viewpoint of the Educational Policies Commission.
- Dr. William W. Bauer, director, Bureau of Health Education, American Medical Association, Chicago, What the Private Physician Expects the Schools to Teach.
- Dr. Walter H. Brown, Stanford University, Calif., The Contribution of School to Individual and Public Health.
- John W. Studebaker, U. S. Commissioner of Education, Washington, D. C., Administrative Problems and Procedures in Health Education.

Mr. Frank Cody, superintendent of schools, Detroit, and Dr. Charles C. Wilson, Hartford, Conn., chairman of the joint committee, will preside. This symposium is a part of the program of the committee to bring about improved mutual understanding of the common health problems in education which are faced by both educators and physicians. Three such symposiums have been held in connection with the annual sessions of the American Medical Association in Atlantic City, San Francisco and St. Louis; this is the first with the National Education Association departmental meeting. Physicians as well as teachers are welcome at the meetings.

The Spanish Prisoner Swindle.—Physicians in many parts of the country are being solicited, among other persons, to participate in what is known as "the old Spanish prisoner's swindle," a perennial fraudulent scheme, according to the Post Office Department. The *Wisconsin Medical Journal* in its December issue reported that several physicians in that state had received letters from a person supposed to be incarcerated in Mexico. The *Bulletin* of the Summit County (Ohio) Medical Society for January indicated that the secretary of the society has been approached by the swindler. A copy of the letter was sent by a Kansas physician. Three New Haven physicians were also among the intended victims. The letter asks the aid of the recipient in saving the sum of \$285,000 (some of the reports say \$185,000) hidden in a trunk somewhere in the United States, in return for which the rescuer is to receive a third of the money. A New Haven physician, wishing to investigate, answered the letter and received an elaborate set of documents, a detailed story of the prisoner's sentence for bankruptcy, his efforts to escape from the country and his detention. The check for the trunk is said to be in a suitcase held by the customs officers and about to be sold at auction unless it is redeemed by payment of the court costs of about \$4,250. The person who will pay the \$4,250 is promised his reward when the trunk is located. The *Chicago Tribune* January 9 published the story of a university professor who

went to Mexico in answer to the letter and handed over \$4,500 to a "representative" of the "prisoner." He received a check on a bank in Houston, Texas. He stopped at the bank and was told that six such checks had been presented within a week. The Chicago Better Business Bureau reported recently that one in five persons replies to the letter and that about one in twenty sends the money. This bureau also quoted the Dallas Better Business Bureau to the effect that a fraud order had been issued against twenty-three Mexicans who had mailed letters from Mexico City, Puebla, Monterey and Tampico. All persons receiving such letters are advised to send them to the U. S. Post Office Department, Washington, D. C., with the envelopes in which they were received.

Government Services

Changes in Public Health Service

The United States Public Health Service announces the following recent promotions to medical director: Drs. Howard F. Smith, Manila, P. I.; Lon O. Weldon, Fort Stanton, N. M.; James G. Townsend, Washington, D. C., and William H. Slaughter, Chicago. Included among those promoted to and commissioned as senior surgeon are Drs. Stephen A. De Martini, Cleveland, and Oliver C. Wenger, Chicago, and the following assistant surgeons have been promoted to the grade of passed assistant surgeons: Drs. Byron J. Olson, Washington, D. C.; Harold R. Sandstead, Hines, Ill.; James A. Grider Jr., Angel Island, Calif.; Charles M. McGill, Savannah, Ga., and Norman H. Topping, Washington, D. C.

Civilian Physicians Wanted for Duty with the CCC

Vacancies now exist in the Civilian Conservation Corps in the Eighth Corps Area wherein the services of physicians can be utilized as civilian employees (physicians) or as contract physicians. Applicants should be graduates of recognized medical schools and should address their applications to The Surgeon, Eighth Corps Area, Fort Sam Houston, Texas. Consideration will be given to applicants, as follows:

1. Medical Reserve officers who are eligible for active duty and promotion. They may be placed on duty under classification P-3 at the initial rate of pay of \$3,200 a year.
2. Physicians who are not members of the Medical Reserve Corps can be placed on duty as contract physicians at the initial rate of pay of \$3,200 a year.

Applicants must consider themselves physically qualified and, if selected, they must report to their first place of assignment at their own expense, and if found physically qualified they will be appointed at the respective rates. If on being relieved from duty, either at the request of the individual or for the convenience of the government, the return transportation must also be at the expense of the individual.

Standards for Venereal Disease Control

Standards with which states using federal funds for venereal disease control have been asked to comply beginning January 1 were recently announced by the U. S. Public Health Service. Seven general provisions were listed as follows:

1. State and local laboratories receiving funds shall demonstrate that serologic tests for syphilis performed by them have a satisfactory sensitivity and specificity rating.
2. Laboratories receiving federal money shall provide services for venereal diseases on the same basis as for other communicable diseases.
3. Health departments and clinics receiving funds shall provide free diagnostic and treatment facilities for (a) the diagnosis and emergency treatment of all patients who apply; (b) all patients referred to a private physician either for continued treatment or for consultative advice and opinion; (c) all patients unable to afford private medical care.
4. All antisyphilitic drugs shall be distributed free on request to all licensed physicians.
5. Diagnostic and treatment facilities shall be available to all persons whether from the particular state or some other location.
6. Properly qualified full time venereal disease control officers shall be employed by the state department of health and all municipalities receiving funds.
7. State health officers shall give due consideration to the relatively higher prevalence of syphilis in urban areas.

These standards constitute the framework around which it is hoped that the complete program will be developed, according to a statement from the surgeon general. He pointed out, however, that the money appropriated by the federal, state and local governments plus the funds made available by various philanthropic and other agencies does not yet approximate the estimates considered necessary for an effective campaign against the venereal diseases.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 6, 1940.

War Neuroses

During the last war the large number of neuroses engendered by fear, shock, exhaustion, physical and mental strain or lack of sleep caught the medical officers of the army unprepared with any organization or agreed method of treatment. These neuroses were popularly called "shell shock," for it was supposed that they were due to the physical effects of high explosives. But it was found that similar symptoms occurred among men who had never been exposed to explosions and were well known in civil life. Moreover, many men who were blown up or buried beneath debris to the same extent returned to duty without suffering any durable effects. The minister of pensions convened a conference under the chairmanship of Lord Horder to advise the government as to the general principles for dealing with these cases. Its report has just been presented and issued to the medical services.

The report points out that most of these neuroses took the form of either an anxiety state or hysteria. The anxiety states had a common characteristic: the constant presence of fear or anxiety accompanied, to a greater or lesser extent, by vasomotor and visceral concomitants. The source of anxiety was the fear of being found afraid or of financial loss and domestic worries. The anxiety is out of all proportion to the cause. Hysteria provides the clearest example of neurosis due to failure of adaptation as the result of conflict between individual needs and social requirements. Suggestion is the most important factor in causing the symptoms. Physical manifestations of severe emotional disturbance, such as mutism and tremors, or temporary loss of power in the limbs due to a minor physical injury, are readily perpetuated as hysterical symptoms in men subjected to physical or mental stress. Suggestions by medical officers, in the course of examination, are often responsible for such symptoms. Underlying the process of suggestion is a conflict between the instinct of self preservation and the ideas of duty and self respect. The development of the symptoms satisfies the patient's ethical requirements and provides an escape from duty on the ground of physical incapacity.

In 1920 the army council appointed a committee to collate the medical experience of the war for future use. The committee reported: 1. The term "shell shock" has been a gross and costly misnomer and should be eliminated. It is a catchword which reacts unfavorably on the patient and others. 2. The war produced no new nervous disorders. The cases formed three classes: (a) Genuine concussion without visible wound as a result of shell explosion. This amounted to only 5 to 10 per cent of all cases. (b) Emotional shock, whether acute in men with a neuropathic disposition or developing slowly as a result of prolonged strain and terrifying experience, the final breakdown being sometimes due to some trivial cause. This formed 80 per cent of all cases. (c) Nervous and mental exhaustion, the result of prolonged strain and hardship.

The diagnosis of concussion should be made only when the history or symptoms leave no doubt of physical injury by the direct explosion of a shell. The concussed patient becomes immediately unconscious or at least severely dazed. When the immediate effect passes off there is complete amnesia for a period immediately before and after the injury. Patients suffering from emotional shock may say that they became unconscious, but careful questioning will show that they can recall most of their experiences.

As to treatment, the first essential when these patients arrive at an aid post is to convince them that they have received no serious injury. When confusion, excitement, loss of memory and disorientation are the chief symptoms, rest, warmth, hot drinks with plenty of sugar or a dose of bromide or phenobarbital will be necessary. Restless or excited patients may be given a hypodermic injection of morphine or soluble phenobarbital combined with hyoscine. When hysterical symptoms predominate an attempt should be made to remove them by suggestion.

PARIS

(From Our Regular Correspondent)

Dec. 23, 1939.

Cushing's Disease

In a lecture recently given by Marañon at the medical clinic of St. Anthony's Hospital, he discussed the pathogenesis of Cushing's syndrome, which Cushing attributed to an adenomatous condition of the anterior hypophysis. He also conceded the pluriglandular nature of the disease. However, in the course of the years the frequency of adrenal lesions has been observed. Marañon claims that "Cushing's disease is a pluriglandular syndrome, the fundamental and often the only characteristic of which is adrenal hyperplasia." He stated that never had there been observed experimentally any effect of the anterior lobe of the hypophysis on other glands similar to that observed in Cushing's disease. On the other hand, the hypophysial lesions described by Cushing were not specific. On the contrary, "in almost all cases" hyperplastic lesions of the adrenal glands were noted and often these changes constituted the anatomopathologic picture. Marañon admitted that cases of Cushing's disease were reported in which the adrenal glands were described as normal. He discussed these cases but considered those undeniable (there were notably four in Cushing's list) in which normal hypophyses were found along with pathologic adrenal glands.

Marañon also called attention to the presence, in the blood and urine of patients who had Cushing's disease, of large quantities of a substance, probably a hormone, that had the same properties as that of the adrenal cortex. He indicated that in certain cases there was an excessive metabolism of the adrenal secretion, that hypersodemia was present and that hirsutism, hyperthyroidism, glycosuria and hypertension were adrenal symptoms. Marañon, however, made no reference to the therapeutic results which are one of Cushing's arguments. According to him, Cushing's syndrome is a pluriglandular disease in which adrenal hyperplasia predominates. Hypophysial basophilism does not possess a significance superior to the thyroid, parathyroid, pancreatic or genital lesions which most often accompany it.

Tetanus Anatoxin

In a recent meeting of the Académie des sciences, Gaston Ramon and Edouard Lemetayer set forth the value and duration of the immunity conferred by tetanus anatoxin. Thousands of animals, chiefly horses, have been immunized by the anatoxin with two injections of 10 cc. at intervals of one month. A little tapioca powder is added to each injection to aid the immunization. A year after the two injections a third injection is administered, likewise of 10 cc. This study was conducted for nine additional years. It demonstrated the importance and stability of the immunity conferred by anatoxin. In 127 control horses the antitoxin rate was equal or superior to one one-hundredth of the international unit and often reached one third. It never went below one three-hundredth. The immunity conferred lasted for at least eight years. Before antitetanus vaccination was generalized, about fifty cases of tetanus were expected out of a total number of 13,099 horses.

After six years of regulated vaccination, no case occurred in 16,000 horses.

It is needless to stress the importance of these results for man. The complete, or almost complete, disappearance of tetanus may be looked for through the suppression of the reservoirs of virus. In more than a million persons vaccinated during military service, no serious accident was noted nor any case of tetanus. The present war will probably furnish a new proof of the immunizing effects of anatoxin.

Effect of Cobra Venom on Sugar in Blood

The effect of cobra poison on higher animals and man is complex because it contains various substances productive, even in isolation, of alteration in the red blood corpuscles, of coagulation or hydrolysis of certain proteins and of other effects, many of which have been, or will be, used in medicine. Gabriel Bertrand and Radu Vladescu add to the effects already noted the significant increase of sugar in the blood. They experimented with cobra poison on rabbits and guinea pigs, animals which react differently. Guinea pigs are much more allergic. Blood specimens were obtained by ventricular puncture after previous injections of cobra poison at different strengths. In guinea pigs a high hyperglycemia was provoked that continued to increase until the animals died. In rabbits almost no effects were observed. There is therefore present in cobra poison a hyperglycemia increasing factor. This was also found, in different proportions, in fourteen species of venomous snakes, among which are included the American rattlesnake, several vipers, the naja, the copperhead and other North American serpents. It differs from echidnase and is more generally distributed than the latter substance. Echidnase exists, in fact, only in vipers; nor is it identical with echidnovaccine, and it is absent from the white venom of *Vipera aspis*. It is premature to conjecture the possible medical applications of this work, but Bertrand's studies and those of his collaborators have already been therapeutically fruitful.

BUENOS AIRES

(From Our Regular Correspondent)

Dec. 23, 1939.

Third International Conference on Nutrition

The third International Conference on Nutrition was held in Buenos Aires October 9-14. It was arranged by the League of Nations principally for countries in the western hemisphere, who were invited to send expert delegates. The first and second conferences, in which Europe, Asia and the United States of America were represented, met at Geneva. Not only members of the League of Nations but also other American countries took part by sending so-called observers who, however, shared in the work of the conference. Other organizations which were represented included the Unión Sanitaria Panamericana with headquarters in Washington and the Office internationale d'Hygiène publique with headquarters in Paris. The League of Nations had delegated a specialist in the field of the economic aspects of nutrition. The International Labor Office in Geneva had also sent a representative. Sixteen countries were present altogether. Prof. Dr. Pedro Escudero, director of the Instituto Nacional de la Nutrición of Argentina and well known for his contributions in this field, was chairman of the sessions. The present report is based partially on a synopsis of the results of this conference prepared by him. Miss Hazel K. Stiebeling represented the United States. The conference met under the auspices of the Argentine government and was formally opened by its minister of the exterior, Mr. José M. Cantilo. Some of the highlights of the proceedings of the conference are herewith submitted.

STATUS OF NUTRITION IN THE WESTERN HEMISPHERE

The open discussion of nutrition led to some tragic revelations of the extent of malnutrition that affects sections of all countries of the western hemisphere. In consequence of subnormal nutrition, large sections of the population are incapable of a normal work program and do not complete an average normal span of life. Accurate statistics are not available for all countries. However, sufficiently reliable conclusions can be drawn from the wage scales and the kind and quality of articles of food produced. In the country of the western hemisphere that is most favorably situated, a quarter of the working population does not earn enough to purchase sufficient food. It has been clearly demonstrated that ignorance of the value of nutrition as a basic prerequisite increases the conditions of poverty for the workers, leading to unnecessary and harmful expenditures and involving the family budget to the detriment of actual needs. Investigations by the Institute of Nutrition of the Argentine Republic have disclosed data that are incontestable. It is therefore recommended that national commissions on nutrition be established in all countries in which they do not yet exist, these commissions to benefit by the counsel of the League of Nations. So far only two countries of the western hemisphere possess such organizations: the United States of America and the Argentine Republic, the former for more than fifty years. Both of these countries alone are at present able to train technicians in nutrition, experts in the fields of sociology and economics, physicians with specialized training in dietetics and the needed additional personnel. Besides it is necessary primarily to conduct surveys in order better to appraise the nutritional status of the population not merely as an isolated phenomenon but in connection with the general standards of living and the family budget. For example, in the republic of Argentina official information is available only for investigations conducted in Buenos Aires together with several individual investigations made by the national labor bureau.

NUTRITION AND WAGES

Unanimity of opinion prevailed among the delegates on the close connection between income and nutrition. The Instituto Nacional de la Nutrición of Argentina presented a report based on an extended investigation of 159 families of workers. The daily expenditures for food fluctuated between less than 10 centavos and 1.30 Argentine pesos. (An Argentine peso at present foreign exchange is worth between 25 and 30 cents of American money.) Families expending less than 60 centavos daily for food for every member of the family are pathetically undernourished (48 per cent of the 159 families were in this condition). The cost of 1,000 calories in Buenos Aires amounts to about 20 centavos; 37 per cent of the families investigated did not possess sufficient means to pay more than 50 centavos daily for food per member of the family. If the daily food bill is less than 60 centavos per member of the family, the nutrition is deficient in albumin. Calcium content is also generally insufficient, because not enough milk, cheese and vegetables are consumed. The same nutritional insufficiency obtains for iron and vitamins A and D. Insufficiency of vitamin C is less marked. These investigations prove that whenever the family income does not exceed 1 Argentine peso for each family member the minimal cost for a normal nutrition and a modest family budget are not met. Assuming a family of five as typical for Buenos Aires, from 1 to 2 pesos is required for each person daily. The minimum assumed is 1.20 pesos, equivalent to 180 pesos a month for a family of five. The experiences of the delegates for Argentina and the United States disclosed that the increase of a family budget to enable a more comfortable living does not assure correct family feeding because of the great ignorance regarding proper nutrition

prevailing in populations. Popular luncheons and restaurant service arranged in many countries largely failed to fulfil their purpose, because they were unable to solve a certain social problem and have in part been abandoned. On the other hand, as Professor Escudero pointed out, public agencies directed by a trained personnel are of great value. They are of social value in that they demonstrate standards of nutrition without trying to replace the family, as the restaurant service did, by furnishing only the fathers or several members of the family good meals. Nutrition problems may not disrupt family life. It is therefore of great importance to educate the public in matters of nutrition in order that the small income may be expended with the best returns. In organizations maintained in the United States and Argentina appropriate advisory service is also given. The delegates were unanimous in stressing the need not only of establishing departments of nutrition at the universities but of expanding instruction to meet these needs. All channels of publicity need to be utilized.

According to extensive biologic investigations made by Argentina's Institute of Nutrition, boiled milk is to be preferred to raw milk. It preserves all nutritious elements and at the same time is free from germs. Moreover, raw milk is about 25 per cent cheaper than after pasteurization. In countries in which pasteurized milk is compulsory, the price of milk is from 60 to 100 per cent higher than that of raw milk. Hence pasteurization should remain optional. Investigations of the chemical composition of human milk, conducted in the same institute, indicate that, contrary to general belief, human milk does not always constitute a superior food. It was found that the nutritive value of human milk may vary from 500 to 900 calories per liter. In the study of the connection between nutrition and the chemical constitution of human milk it was found that nourishment rich in albumins increased the albuminous content of the milk, and food rich in fats increased lacteal fats. Important medical and social considerations for the nutrition of pregnant women can be deduced from these observations.

In the conference discussions, attention was urgently directed to the extremely harmful effect of chronic alcoholism, biologically, morally and socially, on undernourished populations. Other toxic stimulants were also mentioned. It is known, for example, that the Indians of the South American Andes are undernourished and at the same time addicted to the use of coca and alcohol. To this is ascribed the great infant mortality, amounting to 50 per cent in the first year of life.

According to Professor Escudero's statements, one third of the population of Buenos Aires are in needy circumstances and about one fourth of those living in large cities in the United States, quoting the North American delegate. However, conditions in South America become tragic outside the large cities. In rural districts chronic hunger is often the common experience. This accounted for the physical inferiority of 500,000 recruits examined under Escudero's direction in 1932. However, drastic remedial measures have been taken in behalf of maternity welfare, preschool children, school children and so on, and these have been extended to benefit the provinces and the territorial areas. About 658,000 school children are now given food, in one form or another, during school hours. The training of specialists and of dietetic assistants is making considerable progress. It is planned to meet the needs also of the provinces and territories. Legal measures for the enlargement of the National Institute of Nutrition are likewise in preparation. The institute accepts students also from other Latin-American countries. The conference, in its final session, recommended that there be established in the individual countries national commissions on nutrition of a consultant character composed of experts on nutrition, eco-

nomics, finance, labor and social problems, that university professorships in the fields of nutrition and dietetics be set up and that the duties of the assistants (dietistas) be enlarged so that they may supervise the normal nutrition of the population and cooperate with physicians in the feeding of sick persons. Furthermore, the importance of nutrition is to be taught in the schools and be steadily promoted through scientific publicity. Besides, research inquiries at regular intervals are necessary in order to determine the extent of proper nutrition in the populace. The conference also gave expression to its conviction of the seriousness of the problem of undernourishment in Latin-American countries and of the need of close cooperation between the countries affected as well as the need of continuous dissemination of information relating to nutrition. Regular meetings among the different Latin-American countries ought to be planned, in close cooperation with the League of Nations, the International Labor Board, the Oficina Sanitaria Panamericana and the United States of North America. For this purpose a center is to be organized in Buenos Aires which is to publicize knowledge regarding nutrition in the Latin-American countries.

BELGIUM

(From Our Regular Correspondent)

Dec. 8, 1939.

Meeting of Medical Societies of Brussels

This year, on the occasion of the international exposition at Liège, the medical societies of Brussels held their annual meeting in the same city, in the new quarters of the technical faculty. Heger-Gilbert, in discussing medical responsibility, pointed out that the medical profession, the most liberal of all professions, recognized the need a long time ago of imposing professional regulations on itself. Even now these self-imposed regulations vary little from those prescribed by the school of Hippocrates. In 1835 the French court of cassation affirmed the principle of the responsibility of physicians under civil law. At times judges had difficulty in establishing a medical offense by themselves. In their appraisal they took into account not only the facts which they were capable of discerning but also those reported to them by physicians charged by the court with the investigation. In this way judges arrived at a conviction on the question of ascertaining whether the facts charged constituted an offense; that is, negligence, imprudence or an incapacity contrary to standard medical practice. The victim or interested parties have to prove the commission of an unintentional error to be able to claim damages. Keeping in mind the conditions in which at times medicine is practiced, certain judges refrained on principle from entering into the scientific aspects of cases.

About 1890 the Liège court of appeal in a frequently quoted decision handed down the opinion that the law courts were not concerned with questions of diagnosis and treatment. In conformity with this law it is generally admitted that diagnostic mistakes, for example, do not constitute an offense by themselves but, if the mistakes arise from ignorance of definite medical facts, the mistakes are punishable. Recent French decisions view the physician's responsibility as one not limited to quasimisdemeanors but that legal relations between physician and patient enter into the picture of the contract for services, the contract arising from the fact that the physician engages himself to treat the patient and the latter engages himself to pay for the services.

The French court of cassation has recently laid down the principle of the contractual character of a physician's services. Generally, the question of medical responsibility is shaping itself more definitely every day and tends to impose on physicians heavier burdens. They ought therefore to familiarize

themselves with the extent of the obligations which they assume in practicing their profession.

René Goffin, discussing a national fund for the combating of cancer functions, said there were in Belgium six mutual unions of a national scope with 3,110,000 members, equivalent to 37.5 per cent of the Belgian population. Among these the most important is the Union Nationale de Fédération de Mutualités Syndicales et Socialistes de Belgique with 1,270,000 beneficiaries. Within this union the National Anticancer Fund was created in 1935 in connection with a university center. Its object is to fight cancer (1) by organizing a permanent service of cancer detection and treatment, (2) by the payment for surgical, x-ray and radium expenses, (3) by the control of patients for at least five years beginning from the time of treatment and (4) by granting special assistance to incurable persons. For each case of cancer discovered, the physician in charge prepares a dossier intended for the medical director of the Anticancer Fund, containing information of the civil status of the patient, his occupation, the organ affected, the diagnosis and the treatment of the case. The dossiers are arranged medically (according to organ) and regionally (demographically). A third classification analogous to that used by Professor Regaud in Paris controls the regular supervision of the patient. Once the cases have been examined and verified, the patient is directed to a cancer center, preference being given to the four official anticancer university centers. The physicians in charge are full-time staff members. Office hours for examining and treating patients are organized. Attention is aroused by means of leaflets, posters, press articles and public meetings. Every year the scientific and statistical results are brought to the attention of the physicians and administrators of the union. Meetings for disseminating information on the diagnosis and treatment of certain cancers are periodically organized. Following the American procedure, the fund sets forth the anatomopathologic relations existing in different parts of the country and plans to organize a register of bone tumors. The care of incurable patients has been approved voluntarily, though hesitantly, by the Anticancer Fund. It limits itself to special financial aid or, if necessary, to placing the patients in philanthropic institutions. The fund assumes full responsibility for the treatment and hospitalization of patients, by transmitting in advance its obligatory payments to the anticancer university centers. The fund meets all its expenditures solely and without government aid by paying in a part of the individual assessments, amounting to 0.45 franc a month for the heads of families and 0.35 for single persons. There is now under way a detailed inquiry on cancer morbidity affecting 500,000 persons. It is to serve scientific purposes and verify the present assessment rate for the central fund.

Raymond Barthelémy read a paper on occupational diseases of the skin. The clinical examination of occupational diseases of the skin by itself often permits recognition of the harmful agent through an objective medical examination, the quest of elementary lesions, the observations of syndromes that are often well characterized, and a well conducted oral examination. Tests have diagnostic and prognostic value but no longer represent the exclusive foundation of diagnosis, except the single Wassermann reaction in syphilis. "Pure" posttraumatic cutaneous diseases are not frequent except peritraumatic infectious complications on or near wounds caused by accidents suffered in work. Cutaneous posttraumatic carcinoma occurs especially in conjunction with an agent or a cancerogenic product. In that case cancer appears in an acute form and occurs at all ages. The majority of occupational cutaneous diseases consist of allergic eczema-shaped dermatitides, artificial eruptions of sensitization with all the caprices incident to

sensitization diseases including variable and negative tests, and the more annoying problem of the unreliability of efforts at desensitization. Treatment ought to employ not only the procedures of specific desensitization, of shock and so on, but all the resources of dermatologic and general therapeutics. Industrial hygiene under medical control plays an essential part in the prevention and reduction of occupational diseases of the skin. The occupational character of these cutaneous diseases and their tests, treatment and prophylaxis are the business of trained dermatologists rather than that of theorists, lawyers or practitioners not trained in dermatology. In medicolegal matters and those of indemnification, a thorough study of each case is indispensable. Too often a common disease of the skin is ascribed by the patient and even by the physician to an undemonstrated occupational cause, while there are present plural sensitization, secondary undisclosed trades and nonoccupational irritations.

Georges Decharneux treated the coordination of medical activities for protection of the civilian population during the war. Among other unavoidable consequences of mobilization, the disruption of the customary medical services is one of the most important. In most countries of Europe a large number of physicians are now under military control. Some of those who have not been called have placed their services at the disposal of organizations like the Red Cross. The result is that entire regions may find themselves without medical aid. Dispensaries, sanatoriums, private clinics and hospitals see their medical and nursing personnel reduced. Mobilization of hygienists, bacteriologists and druggists has the same consequences. It is necessary, therefore, to anticipate the organization of medical service for war time. It seems that the mobilization of the medical personnel for civilian purposes, relieved of all military obligations, permits the best coordination of the different activities for securing public health in war time. It would be desirable in the interest of civilian health that the organization of medical services during war time be made the object of an international diplomatic conference with the purpose of working out an international convention designed to permit and facilitate the functioning of medical services for civilian populations.

Marriages

DANIEL H. CLARK, Quanah, Texas, to Miss Pauline Waterman, of Pierce, at Wharton, Nov. 12, 1939.

CHARLES A. GUTZMER to Miss Florence Kathryn McArty, both of Shelbyville, Ill., Dec. 31, 1939.

FRANK WHITNEY KELLEY, Dallas, Texas, to Miss Mary Ann Moyar, of Fort Worth, Dec. 2, 1939.

GWYNNE HAROLD LITTLE, Cornelia, Ga., to Miss Ora Horton Longshore at Atlanta, Dec. 1, 1939.

NORMAN M. O'FARRELL, San Diego, to Miss June Miller at Douglaston, N. Y., January 5.

SIDNEY JESSE HELLMAN, New York, to Miss Dorothy Gurkin, of Newark, N. J., Nov. 25, 1939.

ANGEL M. MARCHAND, San Juan, P. R., to Miss Margarita Pont, of Aibonito, Dec. 30, 1939.

AUBREY S. MCGEE to Miss Alice Morgan, both of San Angelo, Texas, Dec. 7, 1939.

PAUL W. EYLER, Bedford, Pa., to DR. MARGARET V. READ, of Catlett, Va., Sept. 9, 1939.

ROBERT BRADNER MERTZ to Miss Christine Mills, both of Tampa, Fla., Dec. 30, 1939.

JUAN MIMOSO, Caguas, P. R., to Miss Esperides Bayonet, of Juncos, Dec. 23, 1939.

JOHN J. FORTI to Miss Adeline Stitz, both of St. Louis, Oct. 18, 1939.

Correspondence

THE USE AND ABUSE OF BARBITURATES AND OTHER NARCOTICS

To the Editor:—There is need for a new word in anesthesia. I suggest anarchapnea—with the stress on the third syllable. It is derived from the Greek "archon," meaning governor or ruler, as in monarch; "anarchos," meaning ungoverned or anarchy, and "pneuma," breath or respiration, as in pneumonia, hyperpnea and apnea. Anarchapnea would therefore indicate the state, now frequently induced in obstetric delivery rooms and surgical operating rooms, in which the normal governor or control of respiration—its archon—is abolished. And the adjective anarchapnic would express the capacity of certain narcotic drugs, particularly the barbiturates when used in excess, to induce this state.

Such a word would force recognition of a feature of deep barbiturate narcosis which, although demonstrated by ample evidence both in clinic and laboratory (Clark, A. J.: *Edinburgh M. J.* 45:829 [Dec.] 1938. Tatum, A. L.: *Physiol. Rev.* 19:472 [Oct.] 1939), is now often ignored by clinicians and laboratory investigators. Morphine and most other narcotics depress respiration and decrease the volume of breathing by lowering the responsiveness of the respiratory center to the carbon dioxide produced in the tissues of the body and brought to the center by the blood. But even in deep morphine narcosis a high percentage of carbon dioxide administered by inhalation is still usually an effective stimulus. In deep barbiturate narcosis, on the contrary, the government of breathing by carbon dioxide appears to be entirely abolished. In this state of respiratory anarchy, breathing continues only under the abnormal and precarious stimulus of anoxemia (Marshall, E. K., Jr., and Rosenfeld, Morris: *J. Pharmacol. & Exper. Therap.* 57:437 [Aug.] 1936).

My attention was first called to this characteristic of the barbiturates by noting that in the present flood of articles from maternity clinics with regard to neonatal asphyxia and resuscitation there are two opposite opinions. One group finds and reports that carbon dioxide diluted with oxygen is a highly effective agent for resuscitation. The other group, including among its chiefs some of the most eminent of American obstetricians, holds that carbon dioxide is of no value, that it may even be harmful and that oxygen alone should be used. And there can, I think, be no doubt that, under the quite different forms and degrees of narcosis and anesthesia employed in these two groups of clinics, their opinions, although diametrically opposed, are both correct.

Intrigued by this conflict, I have examined the publications of each group and find that without exception in all those clinics in which carbon dioxide is reported to be effective in the resuscitation of asphyxial babies either the barbiturates are not administered during labor or they are administered to the mothers only to the extent of moderate sedation. On the contrary, in all clinics where experience is strongly against the use of carbon dioxide for the resuscitation of babies the barbiturates are administered in doses sufficient to induce deep narcosis or even full anesthesia in the mothers and a near approach to anarchapnea in the babies. The conflict of opinion regarding the use of carbon dioxide as a resuscitant is thus accounted for.

Essentially the same conflict of opinion has developed in recent years among the anesthetists of the surgical operating room. One group still uses narcotics in moderation and relies on the inhalational anesthetics for full anesthesia. Members of this group find carbon dioxide to be a valuable auxiliary for rapid induction or termination of anesthesia and a powerful resuscitant in respiratory depression. The other group advocates and employs narcotics in such high dosage as almost, or even entirely, to eliminate any need for an additional volatile anesthetic. These physicians are skeptical of acapnia as a factor in functional

depression (SeEVERS, M. H.; Stormont, R. T.; Hathaway, H. R., and Waters, R. M.: Respiratory Alkalosis During Anesthesia, *THE JOURNAL*, Dec. 9, 1939, p. 2131) and are opposed to the use of carbon dioxide as a resuscitant. As one of the leaders of this group recently told me, they find that, "when respiration begins to fail on the operating table, the worst thing that the anesthetist can do is to administer carbon dioxide even in a low percentage." For the form of anesthesia that each group employs, each is certainly correct in its attitude toward the use of carbon dioxide. For one it is beneficial; for the other it is harmful.

Between the two groups there is a corresponding difference in the need for oxygen. The lightly narcotized patients of the first group can breathe mere air (21 per cent oxygen) without serious danger. On the contrary, the deeply narcotized patients of the second group, if they are not to suffer from anoxia, must be supplied with a high percentage of oxygen. Indeed, deep narcotic anesthesia has become at all practicable only since oxygen became available in the operating room twenty odd years ago. In the lungs of a man breathing mere air the sum of carbon dioxide and oxygen together can never exceed 20 per cent of an atmosphere; as the amount of one gas goes up the other necessarily goes down. Without oxygen from a cylinder, patients in deep narcotic hypopnea would drown in their own carbon dioxide. Under such conditions inhalation of carbon dioxide intensifies the hypercapnia and anoxia. (The Greek word "kapnos" means smoke, or carbon dioxide; hence hypercapnia, excess of carbon dioxide, and acapnia, deficiency of carbon dioxide.)

Such anarchapnea, passing easily into narcotic asphyxia, is the exact opposite of the acapnia apnea which twenty years ago was the chief danger in anesthesia. Prior to 1920 any considerable degree of narcosis was seldom administered before inhalational anesthesia. Under "open ether" overbreathing often greatly decreased the carbon dioxide content of the blood, and when full anesthesia was then induced respiration sometimes failed. It lacked its normal stimulus, its archon. Hyperpnea induced acapnia, and acapnia induced apnea. The surgeon fumed and the anesthetist sweated. Sometimes the patient failed to breathe again; they knew not why. But when carbon dioxide was placed in the hands of the anesthetist such deaths ceased (Henderson, Yandell: *Adventures in Respiration*, Baltimore, Williams & Wilkins Company, 1938).

Certainly no one now would advocate a general return to "open ether" with no preliminary narcotic—a form of anesthesia which sometimes required the aid of two powerful orderlies to hold the struggling and overbreathing patient on the table during induction. The patient who now usually is brought to the operating table at least mildly narcotized is spared what was formerly one of the most distressing features of anesthesia. It is also true that with the increasing use of narcotics the need for carbon dioxide to counteract acapnia has decreased correspondingly. Times and methods change. Deep narcosis, depressed respiration and hypercapnia are now increasingly the fashion. But surely the anesthetist who knowingly abolishes the form of government which nature has provided for respiration and undertakes to replace it in some artificial manner assumes a heavy responsibility.

A third field in which the anarchapnic quality of the barbiturates and other narcotics is often ignored is that of animal experimentation. It is one of the best features of our laboratories that no matter how well established any doctrine may be—such as the control of respiration by carbon dioxide—each new generation of investigators reinvestigates it. Often these investigators find it erroneous, but sometimes it is the new evidence that is erroneous. Now it happens that in experiments on many functions other than respiration the production of full anesthesia once and for all by administration of a single dose of a drug has great advantages; for this purpose the barbiturates

are almost ideal. An occasional death among animals so narcotized is no great matter. But, when the barbiturates or other narcotics are used to the extent of deep anesthesia in experiments on respiration, false conclusions may result; for these drugs abolish one of the fundamental features of the function that is under study. The result is not the correction of error but the overthrow and negation of truth. Properly interpreted, all that much of the new evidence regarding respiration—particularly that on the chemical control of breathing—in many modern papers and books (e. g. Gesell, R.: *Physiol. Rev.* 5:551 [Oct.] 1925. Harrison, T. R.: *Failure of the Circulation*, Baltimore, Williams & Wilkins Company, 1935) actually reveals is the anarchapnic effect of deep narcosis. In experiments on respiration general anesthesia of any kind should be avoided and only light sedation and local anesthesia should be used.

The whole matter comes to this: The barbiturates are generally excellent as sedatives but dangerous in full anesthetic dosage. Like other narcotics, but apparently in higher degree than any others, they depress, and in large dosage abolish, the natural government of respiration by carbon dioxide. Mere air is then inadequate to support life; for the excessive accumulation of carbon dioxide in the lungs and blood correspondingly excludes oxygen. In such anarchapnea inhalation or insufflation of oxygen is necessary to prevent asphyxia. The safe "single dose anesthetic" has not yet been discovered.

YANDELL HENDERSON, PH.D., New Haven, Conn.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BRONCHIAL ASTHMA AND MOLDS

To the Editor:—A man aged 51, with bronchial asthma of the perennial type for about twenty years has been getting much worse the past five years. The onset was insidious. He has been a farmer all his life and there is no history of allergy on either side of his family. He has received cutaneous tests on two different occasions, has been on diets, has taken all the medicine usually prescribed for this condition and has had x-ray examinations. Although all the doctors thus far are agreed on the diagnosis, none of the medicine he has so far received has been of material benefit. He has been in several states for from two to three months at a time but without relief, although he has never been to Arizona or New Mexico. He has been in Denver without results. He has finally come to the point of being skeptical toward any suggestion of treatment of any kind, and if one has had asthma one can readily appreciate the patient's situation. The physical examination is essentially normal except for the chest, which shows moderate emphysema and the typical asthmatic appearances. He is married, with children, all of whom are quite healthy. The patient states that always during and for a short time after a rain he has felt much better, which I believe works just the opposite in the majority of cases of asthma that I have encountered. Also he has had cutaneous tests for practically everything but fungi. These I tested him for and found him to be sensitive to penicillium with about a 2 plus reaction. Would you suggest desensitizing him for this, and if not is there any further treatment one might possibly offer to this man?

E. C. Knight, M.D., Garwin, Iowa.

ANSWER.—Since the history does not particularly suggest bronchitis as a cause and since the asthmatic symptoms are virtually continuous the year round, an allergic cause of either widespread or close exposure suggests itself. Mold allergy is not an unlikely possibility in this case. It is true that the majority of individuals having allergic symptoms from inhaled mold spores present a distinct aggravation of their complaints during the summer months. That is due to the fact that the types of mold (*Alternaria* and so on) which cause a great part of such allergy are general atmospheric contaminants and arise from vegetation in the field. In some cases, however, sensitivity to certain types of molds, such as *Aspergilli* and *Penicillia*, shows but little seasonal variation. This is even more particularly true if the source of these fungi is close at hand, such as hay or straw or a damp moldy basement.

Allergy to the fungus to which reaction was obtained agrees pretty well with the history of this case. As far back as 1873 sensitivity to *Penicillium* was described (Blackley, C. H.: *Experimental Researches on the Cause and Treatment of Catarrhus Aestivus*, London, Baillière, Tindall & Cox, 1893). More extended observations and extension of the list of fungi causing allergy were developed in the last decade. Among the common fungi causing respiratory allergic manifestations may be included *Alternaria*, *Hormodendria*, *Aspergilli*, *Penicillia*, *Moniliae*, *Trichodermiae*, *Phomae*, *Fusariae*, *Mucors* and *smuts* (Feinberg, S. M.: *Asthma and Allergic Rhinitis from Molds*, *Journal-Lancet* 57:87 [March] 1937. Pratt, H. N.: *Seasonal Aspects of Asthma and Hay Fever in New England with Special Reference to Sensitivity to Mold Spores*, *New England J. Med.* 219:782 [Nov. 17] 1938).

The inquirer does not mention the fungi which were used in testing and the technic of testing. In order to be fairly certain that important fungi have not been neglected, a comprehensive list of extracts of the types mentioned should be used. When the reactions have been ascertained it may be possible to modify the environmental source. If there is a damp basement with stored potatoes, apples and similar food creating a source of molds, it would be well to clean that up. It might be possible for the patient to delegate to some one else such duties which take him to the barn or hay loft, since the latter are usually prolific sources of fungi. If such precautions are not sufficient, desensitization treatment is indicated. Such materials are available at some biologic houses. The scheme of treatment is essentially the same as in pollen therapy. For more details and results of treatment it may be well to refer to the article in the *Journal-Lancet* quoted in the preceding paragraph.

REMOVAL OF IRON DEPOSITS FROM SKIN

To the Editor:—A young woman suffering from a recent acute dermatitis of the face with weeping, blistering and itching erythema was advised to apply often a solution of copperas. She was not told what strength to use or how long to use it. After one application, on one day only, it was discontinued. Several days later, when the acute dermatitis disappeared, she was found to be covered with freckle-like, iron rust deposits in the skin of the face and neck. These have not disappeared with the use of bleaching creams or ammoniated mercury. A small cantharides blister over a bad area seems to remove the hemosiderin (?) but leaves an erythema. Is this condition known? What can be done to remove the spots? Is the use of copperas recognized in the treatment of open weeping cutaneous lesions?

M.D., Pennsylvania.

ANSWER.—Iron deposits in the skin from the use of wet dressings of copperas solution were first reported by William Allen Pusey (*Brown Stains in the Skin from Wet Dressings of a Solution of Copperas*, *THE JOURNAL*, Feb. 24, 1917, p. 627). Solutions of copperas, ferrous sulfate or green vitriol have long been advocated for the treatment of poison ivy dermatitis by McNair, a leading authority on poison ivy and its effects. They have undoubtedly been used in thousands of cases, yet the reports of lasting stains from iron deposits in the skin are few. By microscopic study of his case, Pusey demonstrated that the iron was deposited as minute granules massed in the subpapillary layer of the corium, a thin zone of clear tissue separating it from the basal layer of the epidermis. The stains had resulted from the use of many preparations in the treatment of a weeping dermatitis, among them a solution of lead acetate, and after that a solution of an ounce of ferrous sulfate in a gallon of vinegar. After the dermatitis had healed under treatment with ointments, the brown stains remained and persisted for a number of months. Two years later the stains were still present but were slowly becoming lighter.

The paper is concluded with the following observation: "I am told that particles of iron in the eye usually in time completely disappear. These particles are too large to be removed by phagocytes, and if they disappear it must be by their gradual solution. This suggests the possibility of the ultimate disappearance of iron stains in the skin, but the course of this case thus far indicates that this disappearance, if it takes place, will be only after a very long time."

In the recent literature the most interesting contribution is that of R. L. Sutton Jr. (*Pigmentation of the Skin Due to Iron [Copperas] Applied Locally*, *THE JOURNAL*, Jan. 9, 1937, p. 112). He reports a case of impetigo treated by the application of a strong solution of ferrous sulfate in water and then by a solution of lead acetate. This caused a burning sensation and the skin turned dark and showed brown stains after the impetigo had healed. Sutton thinks that the probable sequence is a deposit of the ferrous salt on the superficial connective tissue exposed in the erosions, oxidation by the air to the ferric salt and the formation of a basic ferric acetate on contact of the lead acetate. Thus it is the combination of a ferrous solution applied while

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an acetate solution is still on the skin, or the application of an acetate solution while the ferrous salt remains, that results in the insoluble iron deposit. He suggests that other combinations may have the same effect.

His attempts at therapy by dabbing with a 2 per cent solution of salicylic acid in 30 per cent alcohol and after this had failed the use of ultraviolet rays in a blistering dose were unavailing. C. E. Reyner's case, recently reported (Pigmentation Following the Use of Iron Salts, *Arch. Dermat. & Syph.* 40:380 [Sept.] 1939), substantiates Sutton's idea that other solutions may react in the same way with the iron, for it resulted from application of ferrous sulfate solution followed by buttermilk. After three months' treatment with mild doses of ultraviolet rays the pigment began to fade and in another three months had disappeared. Whether the radiation deserves credit for this or the buttermilk produces a more easily soluble deposit of iron seems debatable. The inquirer is to be congratulated on the fact that a cantharides blister removed the deposit. This can be interpreted to mean that the deposit of iron was very superficial in his case. Cantharides blisters do not scar and the resulting erythema is temporary.

There is no history of intracutaneous bleeding; therefore no hemosiderin is present. The use of copperas solutions on erosions or ulcers of the skin should be avoided. Other applications that do not stain are just as effective.

The standard methods employed for the treatment of psoriasis yield satisfactory results in ordinary cases. In inveterate cases it is true that it is difficult to obtain resolution of the lesions. Even here persistence will usually accomplish a great deal of improvement.

There are a few general measures that are of value. The administration of arsenic in the form of solution of potassium arsenite may be used but should not be given to subjects with acute manifestations. Salicin by mouth and sodium salicylate by vein may be helpful and are of aid especially in conjunction with proper local therapy. Restriction of fats in the diet is advocated by a number of dermatologists.

It is beneficial to have warm soda baths to loosen the scales, which are then brushed off before application of local agents. The most effective of these is chrysarobin or one of its modifications. Somewhat weaker materials of this class are pyrogallol, acid, the tars and ammoniated mercury. A hospital procedure introduced by Goeckerman and approved by many is the combined local use of crude coal tar and ultraviolet rays. Roentgen rays judiciously used are of distinct help at the beginning of treatment of a stubborn psoriasis. They are unnecessary in ordinary cases.

FOOD VALUE OF AVOCADO

To the Editor:—What are the food value and vitamin content of the avocado? Is there a difference in the content of the Texas and Florida varieties?

Leonard T. Carlson, M.D., Minneapolis.

ANSWER.—The chemical composition of the avocado appears to be highly variable, according to the variety and maturity of the fruit examined. The following values have been reported by Chatfield and McLaughlin (Proximate Composition of Fresh Fruits, U. S. D. A., Circular 50, 1931):

Variety	Mol- ture, %	Protein (N x 6.25) %	Fat, %	Ash, %	Crude Fiber, %	Car- bohy- drates* %	Fuel Value per 100 Gm.
Fuerte.....	65.4	1.7	26.4	1.42	1.8	5.1	264.8
Guatemalan race	74.1	2.0	17.2	1.25	1.4	5.4	184.4
Mexican race.....	66.7	2.0	23.2	1.38	...	6.7	243.6
West Indian race	82.2	1.3	7.7	0.98	1.2	7.8	105.7

* By difference including crude fiber.

Similar difference in the fat content of the West Indian varieties, which are largely grown in Florida, and the Guatemalan and Central American varieties, grown in California, have been reported by other investigators.

Tilt and Winfield (*J. Home Economics* 20:43, 1928) have reported the following mineral content for avocados grown in Florida: calcium 0.0370 per cent, phosphorus 0.0492 per cent, iron 0.0063 per cent, magnesium 0.0365 per cent.

Weatherby (California Avocado Association Year Book, 1935, p. 52) has reported an iron content of 0.0015 per cent for calavos and states that in experiments with anemic rats the iron of this fruit was highly effective in regenerating the hemoglobin content of the blood.

The reports of the vitamin content of avocados and avocado oil, which is now used extensively in the manufacture of cosmetics, are conflicting. However, there is evidence that the flesh of the fresh fruit contains small amounts of vitamins A and C. Bachrach and Smith (*Analyst* 63:811, 1938) report that avocado oil as it appears in commerce is practically devoid of fat-soluble vitamins, including vitamin A.

ERYSIPELAS AND PSORIASIS

To the Editor:—A patient who has psoriasis has been told that if she should have erysipelas she would be cured of the psoriasis. Is this true? If not, is there an effective treatment of psoriasis?

M.D., Texas.

ANSWER.—Erysipelas as well as other disease processes may at times cause the involution of psoriatic lesions. It is uncertain that the favorable influence on the psoriasis is induced by the accompanying fever. Fever of itself cannot be depended on to accomplish a good result in the treatment of psoriasis. Certainly, in ordinary cases, such drastic procedure as fever therapy is not justified. Pregnancy too not infrequently causes psoriasis to improve. It is probable that such improvements of psoriasis are similar to those which sometimes follow a change in scenery or climate. Nonspecific therapeutic agents, such as foreign proteins, some metals, and the like, can be controlled more easily by the physicians and are more reliable.

THREATENED ABORTION

To the Editor:—A primipara when three months pregnant developed cramps and bleeding. At the time some of the membranes projected through the cervix and I treated her expectantly. It is now a month since this episode (the pregnancy is four months) and she has continued to have slight bleeding during this entire month. The general condition is good, and an antuitrin-S test for pregnancy is negative (positive for pregnancy). Did I do right at the time to avoid emptying the uterus, in spite of the projecting membranes? Is it advisable to empty the uterus at present or is it preferable to wait, and how long, if the slight bleeding continues? If emptying the uterus is advisable, what procedure should be used? Is there danger of severe bleeding later in the pregnancy because of the separated membranes mentioned?

M.D., Massachusetts.

ANSWER.—It is unusual for a pregnancy to continue when the cervical canal has opened sufficiently to allow membranes to become visible. As a rule when cervical dilatation begins or empties itself completely or incompletely, the uterus ultimately aborts itself completely or incompletely. In an incomplete abortion, provided the patient has no evidences of infection, the continuation of the bleeding may indicate that the gestation is not a normal one. In threatened abortions bleeding usually ceases after a time. In the presence of an abnormal embryo or a hydatidiform mole, bleeding will continue. At this time a roentgenogram should visualize a fetal skeleton. The patient should be subjected to a careful examination in order to determine the normality of the pregnancy. In the event that all the observations point to a normal pregnancy it can be allowed to continue, provided the bleeding does not become profuse. Separation of the membranes will not result in bleeding late in pregnancy unless it was associated with placenta praevia.

ACETYSALICYLIC ACID AND NICOTINE

To the Editor:—Does acetylsalicylic acid bear a similar relation to nicotine in its soothing and quieting effects as acetylsalicylic acid bears to morphine in their chemically combined product diacetylmorphine, better known as heroin, the narcotic effects of which are more profound than either of its chemical constituents acetylsalicylic acid or morphine? Having had some experience in the management of prisoners and mindful of their free use of acetylsalicylic acid in connection with their almost universal use of cigarettes, this inquiry does not seem to me irrelevant.

James L. Jefferies, M.D., Spartanburg, S. C.

ANSWER.—Heroin is made by the chemical action of acetyl chloride (not acetylsalicylic acid) on morphine, by which two hydroxyl groups are replaced by two acetyl groups, thus forming a double ester. Heroin is not easily destroyed in the body and is excreted almost entirely as such in the urine. Morphine, on the contrary, is mostly destroyed in the body. This probably accounts for the greater effects from the heroin. Acetylsalicylic acid, as such, is not known to react immediately with nicotine to form a chemical compound and therefore does not in this way enhance the effect of nicotine.

SCIATIC HERNIA

To the Editor:—In Queries and Minor Notes (The Journal, Nov. 4, 1939, p. 1753) sciatic hernia is mentioned as containing only intestine. In the *American Medical Recorder* (4:597, 1821), is the report of an autopsy which showed a sciatic hernia containing part of the urinary bladder but no intestine. Should not the x-ray examination include a cystogram as well as a gastrointestinal examination?

ANSWER.—Yes; a cystogram might be advisable but this type of case must be exceedingly rare.

Arthur S. Brackett, M.D., Bristol, Conn.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, January 27, page 348.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 5. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: Basic Science. Tucson, March 19. Sec., Dr. Robert L. Nugent, University of Arizona, Tucson.

ARKANSAS: Basic Science. May or June. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. Medical (Regular). Little Rock, June 6-7. Sec., Dr. D. L. Owens, Harrison. Medical (Eclectic). Little Rock, June 6-7. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, April 17. Written examination. Los Angeles, Feb. 26-29. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT: Basic Science. New Haven, Feb. 10. Chairman, Dr. Charles M. Bakewell, State Board of Healing Arts, 1895 Yale Station, New Haven. Medical. Hartford, March 12-13. Sec., Dr. T. P. Murdock, 147 W. Main St., Meriden. Homoeopathic. Derby, March 12-13. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Examination. Dover, July 9-11. Reciprocity. Dover, July 16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: Basic Science. Washington, April 22-23. Medical. Washington, May 13-14. Sec., Dr. George C. Rubland, 203 District Bldg., Washington.

FLORIDA: Basic Science. De Land, May 25. Sec., John F. Conn, De Land. Medical. Tampa, June 17-18. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Joint-Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, April 2. Dir., Bureau of Occupational Licenses, Mr. H. B. Whittlesey, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, April 2-4. Acting Superintendent of Registration, Mr. Lucien A. File, Springfield.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: Medical. Des Moines, March 4-6. Basic Science. Des Moines, April 9. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 18-19. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, June 5-7. Sec., Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, March 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Medical. Baltimore, June 18-21. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. Homoeopathic. Baltimore, June 18-19. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, March 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Ann Arbor and Detroit, June 12-14. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MISSISSIPPI: Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Jackson.

MONTANA: Reciprocity. Helena, April 1. Examination. Helena, April 2-3. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEVADA: Reciprocity with oral examination. Carson City, Feb. 5. Sec., Dr. Frederick M. Anderson, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, March 14-15. Sec., Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, June 18-19. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 8-9. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

OHIO: Reciprocity. Columbus, April 2. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: Basic Science. Portland, Feb. 24. Applications must be on file not later than Feb. 7. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

Puerto Rico: Santurce, March 5. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

TEXAS: San Antonio, June 20-22. Sec., Dr. T. J. Crowe, 918-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 18-20. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WEST VIRGINIA: Charleston, March 4-6. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Basic Science. Madison, April 6. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Feb. 5. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

Alabama Reciprocity Report

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports twenty-six physicians licensed by reciprocity from June 30 through November 27. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1938)	Arkansas
Emory University School of Medicine	(1935)	Georgia
Rush Medical College	(1937)	Missouri
University of Louisville School of Medicine	(1938)	Kentucky
Louisiana State University School of Medicine	(1938)	Louisiana
University of Maryland School of Medicine and College of Physicians and Surgeons	(1938)	Maryland

Washington University School of Medicine	.....	(1936, 2), (1937)	Missouri
Cornell University Medical College	.....	(1930)	New York
University and Bellevue Hospital Medical College	.....	(1933)	New York
University of Cincinnati College of Medicine	.....	(1937)	Ohio
University of Oregon Medical School	.....	(1937)	Oregon
University of Oregon Medical School	.....	(1938, 2)	Tennessee
Meharry Medical College	.....	(1931) W. Virginia,	
University of Tennessee College of Medicine	.....	(1935) Mississippi,	
(1935) Mississippi, (1936, 2) Tennessee	.....	
Baylor University College of Medicine	.....	(1936) Texas,	Louisiana
Medical College of Virginia	.....	(1935)	Virginia
Marquette University School of Medicine	.....	(1930)	Wisconsin
University of Toronto Faculty of Medicine	.....	(1935)	Illinois

Idaho October Examination

Mr. Harry M. Rayner, Commissioner of Law Enforcement, reports the written examination held at Boise, Oct. 2-5; 1939. The examination covered twenty-two subjects and included 160 questions. An average of 75 per cent was required to pass. Sixteen candidates were examined, thirteen of whom passed and three failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists	(1936) 78.8,	77, 79.8
Loyola University School of Medicine	(1937)	78
Rush Medical College	(1938)	81
The School of Medicine of the Division of Biological Sciences	(1935)	80.6
University of Maryland School of Medicine	(1937)	78.7
Harvard Medical School	(1934)	78
University of Nebraska College of Medicine	(1928) 75,	80
University of Pennsylvania School of Medicine	(1937)	79
University of Tennessee College of Medicine	(1938)	79.5
University of Virginia Department of Medicine	(1931)	78
School	FAILED	Year Grad.	Per Cent
Medizinische Fakultät der Universität Wien	(1920)	63
Universität Rostock Medizinische Fakultät, Rostock	(1936)	72
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia	(1937)	65.5

Book Notices

The International Bulletin for Economics, Medical Research and Public Hygiene. W. L. Colze, Editor-in-Chief. Vol. A 40: Infantile Paralysis. Paper. Pp. 179. New York: National Foundation for Infantile Paralysis, Inc., 1939/1940.

This volume includes numerous papers by various authors and is an excellent summary of recent knowledge on infantile paralysis. The information in the opening statement by Basil O'Connor about the National Foundation for Infantile Paralysis was recently reviewed in an editorial in THE JOURNAL. In one of the papers Dr. Josephine B. Neal, of Columbia University College of Physicians and Surgeons, concludes that the seriousness of poliomyelitis is really overestimated when one considers that there are a large number of cases of the truly abortive type which cannot be accurately diagnosed but which confer immunity. Secondly, there is a large percentage of the nonparalytic type of case which can be diagnosed with a high degree of accuracy. If proper orthopedic treatment is carried out a large number of patients who develop paralysis recover with little or no disability. There is no fear of later unfortunate developments in poliomyelitis as there is in encephalitis. Dr. W. Lloyd Aycock, director of research of the Harvard Infantile Paralysis Commission, in discussing the epidemiology of poliomyelitis points out that the age distribution appears to be one of the most constant features of its epidemiology. While it is predominantly a disease of childhood, the incidence is low in infants under 1 year, probably because of a passive transmission of immune bodies to the young through the placenta. It seems clear, however, that the age distribution is primarily a function of contact with the virus. The virus is widespread, as shown by outbreaks in various countries and by neutralization tests. The limited occurrence of the paralytic disease probably lies in some variation in the disease agent or in the resistance of the individual exposed to the virus. The occurrence of the disease in individuals of a certain constitutional type suggests the endocrinologic nature of such an inherent susceptibility. In fact, clinical, epidemiologic and experimental evidence indicates that susceptibility to paralytic poliomyelitis lies in some inherent endocrinopathy which involves the economy of estrogenic substances. Dr. E. W. Schultz, of Stanford University, discusses the chemical prophylaxis of infantile paralysis, pointing out that at present the use of chemicals prophylactically is still a largely

unsolved problem from the point of view of its practical application in man. Dr. James D. Trask, of Yale University Medical School, discusses the viruses of poliomyelitis. The conception that poliomyelitis in man is a nasal disease rests on inadequate experimental data, and the natural port of entry of the disease in man is not yet known. Dr. Albert B. Sabin, of the Rockefeller Institute for Medical Research, discusses the port of entry of the virus, reaching practically the same conclusion. In discussing treatment Dr. C. E. Irwin, of the Georgia Warm Springs Foundation, points out that each case is an individual problem and must be treated as such. There is no positive evidence that one method has a decided advantage over the other. The after-care of the poliomyelitis patient varies from complete physiologic rest over prolonged periods to exercises in a medium of warm water as early after the acute attack as the physical status of the patient will allow. Treatment is discussed also by Dr. Charles L. Lowman, of Los Angeles, from the standpoint of under water exercises, by Dr. George E. Bennett, of Johns Hopkins University Medical School, and by Dr. Richard Kovacs, of the New York Polyclinic Medical School and Hospital. In this symposium also are papers by Pierre Lepine, of the Pasteur Institute in Paris; Sir Henry Gauvain, of London; Carl King, of Stockholm; C. Gomes d'Oliveira, of Lisbon, and by others in this country and abroad. The major epidemics of poliomyelitis from 1907 to 1938 are listed. New York has had more of this disease by far than any other state of the United States and much more than any foreign country. Sweden, which holds second place in the number of cases reported, has had less than half of the number of cases that New York has had. The first large epidemics were reported from the Scandinavian peninsula. These were soon followed by epidemics in the United States, where, with the contiguous provinces of Canada, more than half of the known cases of the world have been reported during the past twenty years. While there is apparently no racial immunity, at present most of the cases reported are in the Caucasian race. The infection has not yet become well established, at least in epidemic proportions, in South America, Mexico, Central America, Asia and Africa.

An Introduction to Medical Mycology. By George M. Lewis, M.D., Associate, and Assistant Attending Dermatologist, New York Post-Graduate Medical School and Hospital, Columbia University, New York, and Mary E. Hopper, M.S., Assistant in Mycology, Skin and Cancer Unit, New York Post-Graduate Medical School and Hospital, Columbia University. Cloth. Price, \$5.50. Pp. 315, with 71 plates. Chicago: Year Book Publishers, Inc., 1939.

The strength of the binding, the quality of the paper, the legibility of the type and the beauty and clarity of the illustrations are evidence of the accomplishment of the publishers and printers in getting out this fine book at a remarkably low price. The photographs from which the illustrations are made are clearly the painstaking work of experts and artists in the field. The project of the authors is ambitious and they have creditably accomplished the major part of their task. The text, as it stands, will undoubtedly prove useful to those who wish to get a first glimpse of the subject of dermatologic mycology. Perhaps the omission of the discussions of the immunologic aspects and of experimental studies would have strengthened rather than weakened the presentation. The weaker chapters are chapter vi, on immunity and cutaneous sensitization, chapter vii, on allergic manifestations, chapter viii, on immune bodies, chapter xxvi, on animal inoculation, chapter xxvii, on the technic of the passive transfer test, chapter xxx, on the trichophytin test and chapter xxxi, on the oidiomycin test. In contrast to the relative weaknesses of these immunologic and experimental discussions, the descriptions of the human dermatomycoses and of the mycologic characteristics of various fungi are so beautifully illustrated and admirably presented that it seems rather a pity that the authors did not confine themselves to these practically more important phases of their subject. In the practical, clinical chapters there seems to be one major omission. At no point is the physician given entirely adequate directions on how to remove the various types of tissues and material in order, in each instance, to have the greatest possible prospects for success in demonstrating any fungi that may be present. In expressing their recommendations for prophylaxis of ringworm and athlete's foot (pp. 121 to 123) the authors express views which are, to say the least, at variance

with those of the majority of experienced dermatologists. The greatest number of experts recognize today that the particular fungi concerned are so ubiquitous and so continuously with all of us that the development of attacks of active ringworm disease of the feet or groin is usually not so much a matter of exposure to new, outside sources of contagion as it is a question of local and individual variations in susceptibility. Thus the exhaustive prophylactic measures described in this book are not only commonly unnecessary but surely often actually harmful in producing cutaneous irritations and exaggerated, morbid fears regarding transmission and contagion. Fortunately the complicated ritual recommended will rarely if ever be executed in its entirety. On the whole, this book should be of value to the student or physician beginning the study of mycology or dermatology. If it meets with the success it merits it will presumably go into further editions, in which case the weak points referred to will undoubtedly be eradicated.

Pictorial Midwifery: An Atlas of Midwifery for Pupils Midwives. By Sir Comyns Berkeley, M.A., M.C., M.D., Consulting Obstetric and Gynecological Surgeon to the Middlesex Hospital, London. Third edition. Cloth. Price, \$3. Pp. 166, with 245 illustrations. Baltimore: William Wood & Company, 1939.

For many years Sir Comyns Berkeley has been a stimulating contributor, both journalistic and textual, to obstetric and gynecologic literature. His numerous articles are always genuinely informative and widely read. His textbooks on obstetrics and gynecology are looked on as standard works both in his country and abroad, as for example his well known volume entitled "Obstetrics by Ten Teachers," now in its seventh edition, 1938, and his equally well known textbook "Diseases of Women," sixth edition, 1937. It has been said that the supreme test of an author's art may be estimated in a study of his revisions, and Sir Berkeley's skill in this regard is amply demonstrated in the present edition of his deservedly popular work for midwives and pupils of midwifery. In this edition the author, as stated in the preface, has in many places revised the material and rewritten it completely in others. The book has been prepared especially for midwives and midwifery students. The author properly believes that a midwife who wishes to practice her calling with safety to her patients should have a complete knowledge of her subject, including the anatomy, physiology and pathology of pregnancy as well as of labor and the puerperium. These various aspects of the subject are embodied in the present volume, the illustrations taking the form of a pictorial review, each one being elucidated by concisely clear legends. The book is composed of five special sections dealing in a systematic manner with anatomy, physiology, pregnancy—together with its complications—labor with its mechanism, symptoms and management. A chapter or section is devoted to the newborn child and its care and, finally, there is a description of appliances and instruments used in ordinary obstetric operations. The book will prove of great value not only to the midwife, for whom it has been designed particularly, but to the general practitioner of medicine as well.

Die Tuberkulose des Menschen: Ein Buch für die Praxis. Herausgegeben von Prof. Dr. Hanns Alexander et al. Paper. Price, 47 marks. Pp. 490, with 216 illustrations. Leipzig: Johann Ambrosius Barth, 1937.

This well printed volume in German is a practical textbook on tuberculosis aiming to disclose to the practitioner the nature of tuberculosis in man. It furthers the concept that tuberculosis should be recognized early in its course and that one is dealing from the beginning with a disease of the entire body. A careful clinical analysis of the individual is requisite in each case. Pathologic anatomy and pathogenesis are described completely, since this is the foundation for a satisfactory understanding of the disease in man. On this basis the diagnosis and treatment of the early forms are developed and the discovery and treatment of tuberculosis of the individual organs is made clear. Since the book is intended for practice, problems not yet clarified have been left in the background. The text is a compilation by men entirely qualified by experience as authors and students of tuberculosis to present the chapters assigned to them. Thus, Schröder presents an interesting introductory history of tuberculosis, while Huebschmann and Schulte-Tigges cover the chapter on pathogenesis, histogenesis and pathologic anatomy and on the tubercle bacillus, which concludes part I. Part II covers tuberculosis as

a general disease, the significance of blood studies, combating tuberculosis as a community disease, and finally therapy (general, medicinal, chemical and specific). Part III considers essentially organ tuberculosis: pulmonary, surgical, of the upper respiratory tract including nasal and oral, gastrointestinal, urogenital, osseous and joint, nervous, cutaneous, of the sense organs and finally glandular and of the organs of internal secretion. Ample references conclude each chapter, and the references are primarily to the German literature and textbooks. A workable index concludes the volume. The fact that it is printed in German will limit its usefulness in American and English schools of medicine and libraries, since there are a number of English textbooks that have no more shortcomings than this volume. It must be admitted, however, that the volume fits the need mainly of the elementary student of medicine and tuberculosis rather than of the specialist in tuberculosis. It may be desirable reading also for the general practitioner who is conversant with German and who wishes to bring his general reading on tuberculosis down to date in a continental (German) fashion, so to speak. It must be admitted that the volume was written primarily for the German student, which may account for the bibliography almost restricted to German publications. The volume is simple and easily read, the numerous illustrations aid greatly in clarifying the text matter, and methods are presented in a modern manner.

Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Das Brustbein und seine Gelenke normale und krankhafte Befunde, dargestellt zum Teil mittels neuer röntgenologischer Methoden. Von E. A. Zimmer. Fortschritte auf dem Gebiete der Röntgenstrahlen, Ergänzungsband LVIII, herausgegeben von Prof. Dr. Grashey. Paper. Price, 13 marks. Pp. 70, with 81 illustrations. Leipzig: Georg Thieme, 1939.

This most interesting book constitutes the fifty-eighth supplementary volume of the *Fortschritte auf dem Gebiete der Röntgenstrahlen*. The new technic referred to for the demonstration of the sternum is shown to be very efficient. It involves making two exposures on the same film, the film being held as close as possible to the chest wall anteriorly and the tube being shifted from a point on one side of the spine to a corresponding point on the other side. For the upper part of the sternum and the sternoclavicular articulations the shift is no more than that made for stereoscopic films, so that the central ray just grazes the lateral border of the spine in each exposure. To study the lower part of the sternum the shift is a good deal greater, the central ray entering at the posterior axillary line on each side. It is emphasized that the two exposures are made on the same film. Furthermore, the focus of the tube is brought as close as possible to the posterior chest wall. The result is a striking obliteration of all structures except the sternum, which it is desired to delineate. The author then describes the development of the sternum, variations within the normal, the function of the sternum and then in detail the numerous variations and anomalies and injuries and diseases which involve the sternum and its joints.

Hydrophthalmia or Congenital Glaucoma: Its Causes, Treatment, and Outlook. By J. Nineland Anderson, M.C., M.D., B.S., Ophthalmic Surgeon to the Alfred Hospital, Melbourne. With a foreword by Sir John Herbert Parsons, C.B.E., D.Sc., F.R.C.S. Published for the British Journal of Ophthalmology. Cloth. Price, \$7. Pp. 377, with 116 illustrations. Cambridge: University Press; New York: Macmillan Company, 1939.

The foreword to this extensive treatise, written by J. Herbert Parsons, elucidates in a concise manner the scope and characterization of its contents. "The last monograph on this subject was published in 1897 by Dr. Edmund L. Gros, under the title *Etude sur l'hydrophthalmie ou glaucome infantile*, and was an excellent outline of our knowledge to that date. The present is a much more extensive treatise and will long remain authoritative. In dealing with a disease of such obscure etiology, in which, however, congenital malformations are a prominent factor, the scientific approach must be by way of pathology and comparative anatomy. In both of these respects the treatment here is exhaustive and beautifully illustrated. Dr. Anderson has taken advantage of his special opportunities to obtain specimens from Australian fauna—*Ornithorhynchus*, *Echidna*, *Pseudochirus*, *Dasyurus*—and to describe the condition of the angle of the anterior chamber in them and in *Tarsius*. This is in itself a valuable

contribution to comparative anatomy. The remarkable association of hydrophthalmia with neurofibromatosis, facial nevi and other angiomatous conditions is fully discussed. To the practicing ophthalmic surgeon the most important part of the book is the description of all the different methods of operative treatment which have been tried, with a thorough analysis of the results obtained by various surgeons. One cannot help regretting that the survey shows no signs of indicating in the treatment of hydrophthalmia any such hopeful improvements in operative technic as were beginning to bear fruit when Dr. Anderson's book on detachment of the retina was published and which have proved so successful." In addition it should be mentioned that Anderson has obtained answers from 346 ophthalmologists throughout the world to 874 questionnaires. The type of questionnaire is illustrated in the opening of the introduction, where the following is set forth:

Consulting Room, Melbourne, 1933.

Father of a 9 year old boy blind from congenital glaucoma. Grahame had a trephine operation on each eye when he was a year old. Would he have had a better chance without such treatment?

Surgeon.—I do not know.

Father.—Do any untreated patients with this disease retain sufficient vision to enable them to earn their living for a few years?

Surgeon.—I do not know.

Father.—If he marries will his children be affected?

Surgeon.—I do not know.

Each of the eight chapters is ended by conclusions and a list of references which leaves no hiatus in the reader's mind. An ample index completes the book. In spite of Anderson's final word that "the future of patients with hydrophthalmia is dark," the library of every physician interested in the eye cannot afford to be without this excellent monograph.

Cancer Handbook of the Tumor Clinic, Stanford University School of Medicine. Edited by Eric Lilljencrantz, M.D., Chief of Tumor Clinic, Stanford University School of Medicine, San Francisco. Cloth. Price, \$3. Pp. 114, with 50 illustrations. Stanford University, California: Stanford University Press; London: Oxford University Press, 1939.

This treatise is a concise practical handbook designed as a graduate course. It presents the methods practiced in the tumor clinic of Stanford University. The booklet is a revision of a syllabus on the diagnosis and treatment of cancer originally published in 1937. Chapters on the cancer problem and on radiation therapy are followed by discussions of cancer affecting various organs. The treatise contains much interesting information. The booklet is nicely compiled and the material well arranged. The bibliography might have been selected with better care and more critically. The author has succeeded in presenting some useful information on cancer in the brief space of 100 pages. Necessarily a comprehensive treatment of any of the subjects is impossible in attempting to cover so large a subject in such a brief space.

Les tuberculoses atypiques: Fréquence, polymorphisme, Intérêt thérapeutique. Par André Jacquelin, médecin de l'Hôpital Necker. Préface du Pr F. Bezançon. Paper. Price, 70 francs. Pp. 356, with 20 illustrations. Paris: Masson & Cie, 1939.

André Jacquelin and the Necker Hospital (where Laënnec worked) need no introduction to tuberculosis or to medicine; and a preface by Bezançon is a seal which even a reviewer could hardly belittle, had he a mind to. Of course, it is regretted that all of us cannot read French fluently, but those who can do so only with the aid of a dictionary and who are interested in tuberculosis will find this volume (primarily a textbook) on the atypical types of tuberculosis most interesting and enlightening. The book is exhaustive and comprehensive and is well presented, even though one might feel the lack of illustrations usually found in such volumes in English and German nowadays. The easy reading of the subject matter, however, amply makes up for the lack. The importance of the constitution and temperament of the individual in playing a part in the morbid process leads to the observance of the atypical types in tuberculosis, and Jacquelin deals with these in a primarily clinical fashion. Thus after considering the general pathogenesis in the form of generalities, tuberculin hypersensitivity, bacillary toxemia and bacillemia in the first chapter, he takes up the clinical forms and diagnosis of the pulmonary and pleural atypical conditions and the rhinotracheal bronchitides in the second and

third chapters. The succeeding three chapters respectively give detailed consideration to the atypical forms of febrile, general deficiency endocrine, neuropsychic and hepatodigestive syndromes after covering tuberculous asthma and tuberculous rheumatism. Diagnostic intricacies and the principles and modes of medication are considered in a modern manner in the seventh and eighth chapters. A final chapter of conclusions of a personal nature, resulting from an exhaustive experience, is put briefly but pointedly in two and a half pages.

This volume is written by a clinician for clinicians. Although the subject might appear to be indefinite from the title, a feeling of confidence gratifies the reader that Jacquelin has brought the subject matter together in practical fashion for the clinician so that it is workable clinically and so that treatment can be guided more ably with precision and detail. The volume possesses a page by page footed bibliography which is replete with references authenticating statements. It can be recommended without reserve to all who read French and who are concerned with internal medicine and especially in the diagnosis and treatment of tuberculosis and allied conditions of confusing nature.

The Neurogenic Bladder. By Frederick C. McLellan, M.S., M.D., Instructor in Surgery, University of Michigan Medical School, Ann Arbor, Michigan. Cloth. Price, \$4. Pp. 206, with 9 illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1939.

Probably no subject in medicine is in such a state of confusion and so poorly understood as neurogenic disease of the bladder. In this monograph the author has attempted to lay a foundation on which the subject of the neurogenic bladder might be more rationally studied. In this attempt he has succeeded. The work is based on the study of 500 cystometrograms, which the author has made in cases of various types of neurogenic and nonneurogenic disturbances of the bladder. From a correlation of the clinical and cystometrographic data a simple classification of the various neurogenic diseases of the bladder has been made. Whether this classification will stand the test of time is questionable but not important. Its value lies in the fact that for the present it clarifies the subject sufficiently to give physicians a standard of measurement and a common language with which to discuss the condition. As the author intimates in the introduction, as such observations by various observers are made in the future, present opinions may require revision. Physicians interested in this subject will enjoy the book. In addition to the original work and observations it contains an excellent summary of present accepted opinions concerning the neuro-anatomy and neurophysiology of the bladder and the physiology of micturition. Illustrative charts of typical cystometrograms are appended.

Veröffentlichungen aus der Konstitutions- und Wehrpathologie. Herausgegeben von L. Aschoff, W. Ceelen, W. Koch, P. Schürmann. Geleitet von W. Koch. Heft 44. Band X, Heft 2: Über den Status varicosus und die Bedeutung der Konstitution für die Entstehung der Varizen insbesondere im Pfortaderbereich zugleich Bericht über eine eigenartige Form der Splenomegalie. Von Dr. med. Karl-Helz Kirschner. Paper. Price, 10 marks. Pp. 148, with 2 illustrations. Jena: Gustav Fischer, 1939.

This monograph offers a complete bibliography of the varicosities in the portal system. The author adds a carefully described case with its clinical history and the conditions found at necropsy. A huge splenomegaly was associated with the abnormal dilations of the portal vein. The student of the peripheral vascular system will find a well organized assembly of curious pathologic manifestations which seldom obtain clinical significance.

Circulatory Diseases of the Extremities. By John Homans, M.D., Clinical Professor of Surgery, Harvard Medical School, Boston. Cloth. Price, \$4.50. Pp. 330, with 45 illustrations. New York: Macmillan Company, 1939.

This book justifies its title because it considers diseases of the peripheral veins, arteries and lymph vessels. The quality of the presentation varies considerably, apparently with the author's knowledge of the subject. It is natural that the discussions of surgery are more informative than are the discussions of medical aspects, since the author is a surgeon. Two substantial objections are apparent. The bibliography is incomplete and in some places there is lack of specific instruction relative to treatment and tests, which detracts from the practical value of the volume. Nevertheless the book represents a substantial contribution to the presentation of the subjects with which it deals.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Act: Acute Dilatation of Heart Due to Strain.—In the course of his employment, which consisted principally of unloading and handling sacks of feed and grain weighing from 100 to 120 pounds, the claimant, a man aged 37 and in good health, felt a severe chest pain in the region of his heart. He became short of breath, coughed violently and was unable to continue work. His condition grew worse and during the evening of the same day he was taken to a physician. A fluoroscopic examination revealed an inch and a half dilatation of the left side of the heart. Following absolute rest and medical treatment administered by the physician over several months, the dilatation completely disappeared. There were no heart lesions. The claimant eventually recovered fully but was admonished to refrain from heavy work in the future. He subsequently instituted proceedings under the workmen's compensation act of West Virginia. From rulings of the workmen's compensation appeal board and the compensation commissioner that the disability suffered by him was not due to injury received in the course of and resulting from employment, the claimant appealed to the Supreme Court of Appeals of West Virginia.

The sole question to be determined on appeal was whether or not the dilatation was an injury within the meaning of the West Virginia workmen's compensation act. The claimant contended that the dilatation was precipitated by the lifting of a particular sack of grain. It was then, he argued, that he felt a pain over his heart. The physician who treated him, the only medical witness in the case, testified that the dilatation was the result of a "little unusual lift" or strain due to work on the particular day. This conclusion was based, in part, he said, on the fact that there was no heart lesion. In the opinion of the Supreme Court of Appeals, the claimant's disability was the result of a definite, isolated, fortuitous occurrence and was a "personal injury" within the meaning of the compensation act. Disease that is attributable to a specific and definite event arising in the course of, and resulting from, the employment is compensable under the compensation act of West Virginia, the court said.

The claimant in this case was a young man, 37 years of age and in good health prior to the injury. In the lifting of a particular sack he suffered severe pain and was thereby rendered unable to do further work. There was no evidence, lay or medical, of a chronic heart condition; the fact that he fully recovered indicated that he had no preexisting heart ailment. The total temporary disability was therefore due to an acute dilatation of a normal heart.

The court, therefore, directed the payment of compensation to the claimant.—*Gilbert v. State Compensation Commissioner (W. Va.)*, 1 S. E. (2d) 167.

Medical Colleges: Mistake as to Previous Study a Bar to Student's Suit to Compel Issuance of Degree.—The plaintiff instituted suit to compel Duke University to award him the degrees of doctor of medicine and of bachelor of science in medicine. The evidence disclosed that the university impliedly contracted with him that when he had furnished it satisfactory evidence of having completed the courses required in the first and second years of a "class A medical school" he would be admitted as a third year student in Duke University School of Medicine and that when he had completed the courses required in the third and fourth years of the university's school of medicine he would then be awarded a degree of doctor of medicine and on doing certain extension work he would be awarded the further degree of bachelor of science in medicine. The plaintiff furnished, or caused to be furnished, to the university what purported to be a certificate from a medical school as to work completed by him in the first and second years of its medical course, on the strength of which he was admitted to Duke University School of Medicine. Subsequent to his admission there the plaintiff completed the work and successfully passed examinations on all subjects required in the third and fourth

years' work and successfully performed the extension work required for the degree of bachelor of science in medicine.

Subsequently it developed that while the certificate furnished by the plaintiff as to his work in the first and second years of his medical course contained the statement that he had successfully passed examinations in bacteriology and physiology, that he had been recommended for the third year class and that he had been granted an honorable discharge from the school, the fact was that the plaintiff had been conditioned in bacteriology and had failed in physiology and had been dropped from the school. The plaintiff testified that he did not know at the time he furnished or caused to be furnished the purported certificate that it contained the false statements and that he did not learn of such falsity until after he had completed the work of the third and fourth years in Duke University School of Medicine. The evidence also disclosed that the university itself did not learn that the statements were false until after the plaintiff had completed the work referred to. On these facts the trial court entered a judgment for the university, and the plaintiff appealed to the Supreme Court of North Carolina.

Before specific performance of a contract can be enforced, said the Supreme Court, it must be established that the contract was procured fairly and openly. Any misrepresentation in its procurement will be a bar to enforcement, and the fact that such misrepresentations were innocently or ignorantly made does not alter the result. The misrepresentations in the present case, even though innocently or ignorantly made, were a bar, in the opinion of the court, to the plaintiff's suit for the specific performance of a contract predicated on them.

The plaintiff urged his right to receive the degree on evidence tending to show that after the degrees sought had been denied him by the university he studied and successfully passed examinations in bacteriology at George Washington University and in physiology at the University of Michigan and that he did this on the advice of the dean of the School of Medicine of Duke University, thinking that when he had done so the university would then grant him the degrees in question. But, said the Supreme Court, the evidence failed to establish a contract on the part of the university to award the degrees sought if the plaintiff subsequently furnished evidence of having satisfactorily passed examinations on the subjects on which he had failed prior to admission to the defendant university. The Supreme Court accordingly affirmed the judgment of the lower court in favor of Duke University.—*Pate v. Duke University* (N. C.), 1 S. E. (2d) 127.

Blindness: Constitutionality of Act for Relief of Blind.

—The plaintiffs, ninety in number, filed suit against Christian County, Ill., to collect unpaid blind relief benefits which, they claimed, were due them under an act passed by the Illinois legislature. The county filed a motion to dismiss the complaint on the ground that the act for relief of the blind was unconstitutional, that none of the plaintiffs had any vested right to the fund and had no right at law to sue for the same but that the provisions of the act were for a gift only, the payment of which was voluntary and not mandatory. The trial court entered a decree for the plaintiffs and the county appealed to the Supreme Court of Illinois.

The county contended, among other things, that, because the blind relief act empowered the examiner of the blind to say whether an applicant was or was not blind, such discretion constituted an unlawful delegation of legislative power. The Supreme Court, however, was unable to accept this view. The question whether an applicant is or is not blind, the court pointed out, must be determined by some competent authority. The legislature imposed that duty on the examiner, and the relief act in that respect is not different from many other statutes of Illinois where, in the administration of the law, other professions are called on to determine facts essential to the proper administration of an act. The county further argued that because the blind relief act, prior to 1935, contained no definition of blindness the examiner was permitted to determine that matter in his own discretion. But, the court said, blindness is a term known to the average person of ordinary intelligence, and where such a term is used it needs no further definition on the part of the legislature. The court, furthermore, did not consider the payments made under the act as a gift or bounty. Such payments

have a tendency to prevent the necessity for the erection of homes for the blind in those cases in which the subject is unable to gain a livelihood. The maintenance and care of the blind falls in the same class of duties resting on counties as the support of dependent children and the support of paupers. And, the court continued, where a pension has accrued the beneficiaries have a vested right therein.

In the opinion of the court, the act was valid and the decree of the trial court to that effect was affirmed.—*Proffitt v. Christian County* (Ill.), 19 N. E. (2d) 345.

Malpractice: Retroactive Effect of Statute of Limitations.—The defendant, a physician, operated on the plaintiff in March 1926 for gallstones and for hernia. For ten years thereafter the patient suffered pains in the region of the gallbladder. A second operation performed in March 1936, apparently by another physician, revealed the presence of a pus-soaked gauze sponge. Alleging that the gauze had been left in the gallbladder or the cavity enclosing it by the defendant in March 1926, the patient brought suit for malpractice. Holding that the cause of action was barred by the statute of limitations, the trial court dismissed the case. The patient then appealed to the Supreme Court of Arkansas.

A law was enacted in Arkansas in 1935 providing that:

Hereafter all actions of contract or tort for malpractice, error, mistake, or failure to treat or cure, against physicians, surgeons, dentists, hospitals, and sanitariums, shall be commenced within three years after the cause of action accrues. The time of the accrual of the cause of action shall be the date of the wrongful act complained of and no other time.

Prior to the enactment of the 1935 law a person wronged by malpractice had three years from the time of the discovery of the wrong in which to bring suit. The patient contended that she had three years from the date of the passage of the 1935 act to bring suit. A retroactive application of the act, she argued, would take away a subsisting vested right in her, would cut off all remedy and deprive her of her cause of action. But, said the Supreme Court, the 1935 law did not take away any subsisting vested rights and did not deprive the patient of her cause of action. The 1935 law contained no emergency clause; it became effective ninety days after the adjournment of the session of the general assembly at which it was enacted. The patient then had ninety days after the passage of the act in which she might have brought her suit.

It is a general rule, continued the court, that statutes of limitation are to be applied to all cases thereafter brought without any regard to when the cause of action arose, subject to the rule that such statutes cannot be used to cut off causes of action without reasonable time being given in which to bring suit. In this case the patient had ninety days after the passage of the act, and whether that period was a reasonable time was a question for the legislature to determine. There was no allegation in the complaint, the court pointed out, that there was any fraudulent concealment by the defendant or any concealment at all; the patient claimed only that she did not discover what caused the pain and suffering until after the second operation.

The judgment of the trial court for the defendant was therefore affirmed.—*Steele v. Gann* (Ark.), 123 S. W. (2d) 520.

Malpractice: Liability for Prenatal Injuries to Infant.

—About thirteen years after her birth, the original plaintiff in this case sued the defendant physicians to recover damages because of personal injuries alleged to have been sustained by her prior to her birth and for which, she contended, the defendants were responsible. After suit was commenced, the child died and her mother, as administratrix of her deceased daughter's estate, filed an amended complaint in which it was alleged that the defendants negligently diagnosed the mother's pregnancy as a uterine tumor; that they negligently treated the mother by administering six roentgen treatments of forty-five minutes each, extending over a period included between the fourth and the seventh month of pregnancy; that such treatments were of such strength that the fetus was burned and certain tissues of its body were destroyed; that the bones of one ankle and certain vertebrae in the neck failed to mature and that consequently the child was born a permanent cripple and feeble-minded, developing only to the mental age of 2 years, although she lived

to be 13 years of age. On motion of the defendant physicians, the trial court dismissed the amended complaint and entered judgment accordingly. The plaintiff then appealed to the appellate court of Illinois, first district, second division.

The real and only question involved in this case was whether a child after its birth may maintain an action for injuries sustained before its birth. In answering that question in the negative the appellate court relied on a previous decision of the Supreme Court of Illinois in the case of *Allaire v. St. Luke's Hospital*, 184 Ill. 359, 56 N. E. 638, 48 L. R. A. 225, 75 Am. St. Rep. 176, quoting from it as follows:

The action is not given by any statute, and, if maintainable, it must be so by the common law, and therefore the question is whether, at common law, the action can be maintained. Had the plaintiff, at the time of the alleged injury, in contemplation of the common law, such distinct and independent existence that he may maintain the action, or was he, in view of the common law, a part of his mother? If the former, it would seem the action can be maintained, but, if the latter, not; because, if a part of his mother, the injury was to her, and not to the plaintiff. . . . That a child before birth is, in fact, a part of the mother, and is only severed from her at birth, cannot we think be successfully disputed. The doctrine of the civil law and the ecclesiastical and admiralty courts therefore, that an unborn child may be regarded as in esse for some purposes, when for its benefit, is a mere legal fiction, which so far as we have been able to discover has not been indulged in by the courts of common law to the extent of allowing an action by an infant for injuries occasioned before its birth. If the action can be maintained, it necessarily follows that an infant may maintain an action against its own mother for injuries occasioned by the negligence of the mother while pregnant with it. We are of opinion that the action will not lie.

After quoting from the *Allaire* case and reviewing a number of cases from other jurisdictions, the court in the present instance pointed to the fact that counsel for the plaintiff had cited no case in which a court of review had held that an action may be maintained by a living child for injuries suffered before its birth or by the administrator of the estate of a child, after its death, for the benefit of its heirs at law or next of kin for like injuries. The court, therefore, concluded that such an action may not be maintained unless and until the right to bring it is afforded by legislative enactment.

The judgment of the trial court for the defendant physicians was therefore affirmed.—*Smith v. Luckhardt et al. (Ill.)*, 19 N. E. (2d) 446.

Society Proceedings

COMING MEETINGS

- American Association of Anatomists, Louisville, Ky., Mar. 20-22. Dr. E. R. Clark, Dept. of Anatomy, Univ. of Pennsylvania School of Medicine, Philadelphia, Secretary.
- American Association of Pathologists and Bacteriologists, Pittsburgh, Mar. 21-22. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.
- American Orthopsychiatric Association, Boston, Feb. 22-24. Dr. Norvelle C. La Mar, 149 East 73d St., New York, Secretary.
- American Physiological Society, New Orleans, March 13-16. Dr. Philip Bard, Johns Hopkins Medical School, Baltimore, Secretary.
- American Society for Experimental Pathology, New Orleans, March 13-16. Dr. Paul R. Cannon, Dept. of Pathology, University of Chicago, Chicago, Secretary.
- American Society for Pharmacology and Experimental Therapeutics, New Orleans, March 13-16. Dr. G. Philip Grabfield, 319 Longwood Ave., Boston, Secretary.
- Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. W. D. Cutter, 535 North Dearborn St., Chicago, Secretary.
- Federation of American Societies for Experimental Biology, New Orleans, Mar. 13-16. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.
- Mid-South Post-Graduate Medical Assembly, Memphis, Tenn., Feb. 13-16. Dr. A. F. Cooper, Goodwyn Institute Bldg., Memphis, Tenn., Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Twelfth Annual Meeting, Held in Chicago, Nov. 3 and 4, 1939

Experimental Study on Ingestion of Lead Compounds

DR. ROBERT A. KEHOE, Cincinnati: The total lead metabolism of normal human subjects on a prolonged regimen of increased oral intake of soluble lead, over a period of six months in one case on a daily dose of 2 mg., and a period of thirty months in another on a daily dose of 1 mg., were observed. Complete clinical and analytic data, in abbreviated form, were shown in demonstration of the microscopic blood picture, the excretory response, and changes in the levels of lead concentra-

tion in the blood and urine. The significance of the data in connection with the hygienic problem of human lead ingestion with food and beverages and in relation to the diagnosis of lead intoxication were pointed out.

DISCUSSION

DR. EUGENE L. WALSH, Chicago: This summary by Dr. Kehoe does not reflect the multitude of data from which these facts have been condensed. In analyses for various substances, that for lead stands foremost in technical difficulties. While the amounts of material determined in this study are small, they are within the limits of experimental error. This work must be accepted as another fundamental step in our knowledge of lead metabolism in man. Not infrequently, one hears of chronic subclinical intoxication of lead and other heavy metals, ascribed to small quantities of lead ingested over long periods. Dr. Kehoe has shown that ingestion of lead in quantities far in excess of those ordinarily encountered may be continued with impunity. The quantities of lead which, when ingested over a long period, will lead to intoxication are unknown. Several states have imposed a maximum allowable concentration of one-fortieth grain (1.5 mg.) per pound for spray residues. Dr. Kehoe has shown that the average American diet contains from 0.18 to 0.3 mg. daily. If to this is added the amount of lead ingested by a worker who handles food or tobacco with lead-covered hands, this amount could be increased to a quantity thought to be toxic, even as high as 10 mg. daily. Lead intoxication by this source is possible. However, one must remember that there are usually other states of ill health that play a contributory role. In health Dr. Kehoe's experiments show that ingestion of the quantities of lead just noted does not lead to acute intoxication or any demonstrable subclinical syndrome; that much of the lead passes through the intestinal tract unabsorbed has been shown. I should like to ask if either of the subjects suffered a respiratory infection, wounds or other maladies and what effect was noted on the healing process or on the lead balance study. I should also like to ask about the effect of acidosis or a change in the intestinal flora on lead metabolism.

DR. ROBERT A. KEHOE, Cincinnati: Neither of our subjects has had any symptoms of plumbism, even of the vague type often seen in borderline cases, nor have they shown any of the blood changes (abnormal numbers of reticulocytes or stippled erythrocytes) which are regarded as evidence of abnormal lead absorption. In one of them, who had a small infected pocket at the gingival margin of a central incisor, a faint but definitely punctate blue area developed in the gum overlying the pocket. This area disappeared completely within three days after the evacuation and treatment of the pocket. It should be remembered that a lead line is evidence of lead absorption only, not of intoxication. Both subjects have had acute upper respiratory attacks in the form of common colds. These have had no material influence on the lead absorption or excretion, nor have they run any unusual or prolonged course. There has been no serious illness. An attack of food poisoning in one subject ran the usual course of diarrhea and vomiting, with recovery in three days. The subject was not too ill to collect all the materials evacuated by emesis and diarrhea, so that the experiment did not suffer. We have not attempted the production of changes in the acid-base equilibrium or in any other phase of the mineral metabolism, with the idea of influencing the deposition or mobilization of lead, wishing rather to obtain the normal undisturbed pattern of the lead metabolism over a prolonged period.

Urinary Excretion of Thiamin: Its Significance and Diagnostic Value

WILLIAM D. ROBINSON, M.D., DANIEL MELNICK, Ph.D., and HENRY FIELD JR., M.D., Ann Arbor, Mich.: The chemical reaction between thiamin and diazotized p-amino-acetophenone in alkaline solution has been utilized for the chemical determination of the vitamin in urine. During the production of an experimental thiamin deficiency urinary excretion dropped very rapidly, and during recovery it rose to normal slowly. Excretion values before and after a test dose are reproducible in the same normal subject under standardized conditions. Values obtained before and after a test dose on twenty-four normal adults and eighty-nine patients with a variety of clinical conditions show good correlation with the thiamin contents of the preceding diets.

From these data are derived standards for the interpretation of results obtained under conditions of the test.

DISCUSSION

DR. CHESTER J. FARMER, Chicago: This paper is an interesting contribution in the study of vitamin B₁ metabolism. Studies have previously been conducted on vitamin B₁ metabolism but not in this way. The authors took the method of Prebluda and McCollums, which after three years from its first announcement has just been reported as a specific reaction for vitamin B₁, and made use of it for the quantitative estimation of vitamin B in food materials and in excreta. We owe them a debt for making this specific reaction available as a means of quantitation. We are impressed with the remarkable consistency of excretion of vitamin B₁ with the subject on a uniform diet. I have been wondering, in going over some of these experiments, if Dr. Robinson can tell what happens during starvation. The caloric intake of these patients with inadequate supply of vitamin B₁ may have pushed the vitamin B₁ excretion down more rapidly than if the patients were subject to starvation. In one person symptoms of deficiency type occurred after an inadequate vitamin intake for two weeks. I should like to ask if a person kept for two weeks on an inadequate diet can be expected to show some of the deficiency symptoms with regularity. I should like to ask also if in test dose administration there is not a superposition of test dose on food intake. In another publication by these authors it has been shown that, if a 5 mg. test dose is given without food, the percentage of excretion is not as great as when the dose is given with food. Does this mean a greater destruction of the vitamin in the body? Is that of necessity the case, or is the lesser excretion not an evidence of greater utilization?

DR. M. A. BLANKENHORN, Cincinnati: There is always an academic question in this problem of the intake and output of vitamin as to its threshold in the kidney. I should like to ask if the function of the kidney has been taken into regard. In your tables there is only one cardiac patient with normal output of thiamin. Is it not possible that kidney disease, which often accompanies heart disease, was responsible for low thiamin output? What methods were employed to decide that question? I should also like to ask what the clinical manifestations of vitamin B deficiency were after two weeks of inadequate intake.

DR. T. D. SPIES, Cincinnati: This is an important paper. When one considers that 94 per cent of the thiamin is removed from white flour and that the greatest natural source the human being has is flour, it appears almost inevitable that many are on the verge of subclinical thiamin deficiency. Also there are persons who do not absorb thiamin from the alimentary tract. Then infection, pregnancy and other conditions increase the requirement. I hope this test is made practical enough for physicians to use it in their offices so that one can have some idea of the subclinical state. There is undoubtedly a long period of ill health during which this deficiency is developing.

DR. ALF SVEN ALVING, Chicago: Patients treated with alkali therapy in gastric ulcer have renal deficiency at times and I wonder if any studies have been made in that type of case.

DR. WILLIAM D. ROBINSON, Ann Arbor, Mich.: In answer to the question concerning the status of thiamin in starvation, we do not have any patients who have been starved. We have tested several with anorexia nervosa and some patients who have eaten virtually nothing because of psychiatric disturbances, and they show a very low excretion on the day of the test and a low response to the test dose. We have no critical data which would enable us to differentiate as to whether thiamin is depleted more or less rapidly in starvation. As to the matter of development of symptoms during a period of deficient intake, the first symptom to appear was aching of the calf muscles, which became more marked after progressively decreasing amounts of exercise, as well as paresthesia of the lower extremities, tenderness of the calf muscles and dyspnea on mild exertion. These symptoms appear in from ten to fourteen days. Jolliffe and his co-workers have stated that neuritis will appear in an alcoholic patient who ingests a diet totally deficient in thiamin for twenty-one days. The superimposition of the test dose on the thiamin furnished in the food has been taken care of by the manner in

which the study was done. All subjects ate the same diet for two days and an oral test dose was given on the second day. The amount of thiamin excreted the first day has been subtracted from the amount excreted after the test dose to correct for the excretion of thiamin from dietary sources. The excretion of a smaller fraction of the oral test dose taken into the empty stomach is an actual observation and is not due to superimposition of additional thiamin on the amount supplied by the diet. As to the renal insufficiency, the renal function has been taken into consideration because we have found patients with uremia who have low excretion. None of the reported patients with heart disease or peptic ulcer had significant impairment of renal function.

Effects of Nicotinic Acid and Related Pyridine and Pyrazine Compounds on Temperature of Skin

DRS. WILLIAM BENNETT BEAN and TOM DOUGLAS SPIES, Cincinnati: Repeated skin temperature measurements were made on fifty-eight subjects under controlled conditions at 20 C. When 20 mg. of all compounds containing the radical (nicotinic acid, its sodium, ammonium, ethyl, and mono-ethanolamine salts) was given intravenously there was an increase in cutaneous temperature. No vasodilatation occurred with the same dose of quinoline, dinicotinic, 2,6-dimethyl dinicotinic, 6-methyl nicotinic acids, nicotinamide or its hydrochloride, nicotinic acid N-diethyl amide, pyridine, 3 amino pyridine, sodium sulfapyridine, pyrazine mono- or 2-3-dicarboxylic acids. The temperature rise was delayed or abolished when from 30 to 60 Gm. of aminoacetic acid was taken one-half hour before oral doses of nicotinic acid. Epinephrine and nicotinic acid had antagonistic action on cutaneous vessels, whereas histamine and nicotinic acid had somewhat similar actions.

DISCUSSION

DR. MISCH CASPER, Louisville, Ky.: I should like to ask if when large doses of this material were given there were headaches similar to those due to large doses of histamine.

DR. TOM DOUGLAS SPIES, Cincinnati: One thing that is important is that a number of these products are useful in the treatment of pellagra but do not produce vasodilator response.

DR. NELSON W. BARKER, Rochester, Minn.: Does this vasodilatation occur in the extremities? How long does it last?

DR. WILLIAM B. BEAN, Cincinnati: Headache occurs but is not exactly similar to that produced by histamine. The nicotinic acid headache is a sensation of fullness which seems to be milder than the other type and is much shorter. I do not believe they are identical. Doses of more than 1 Gm. of nicotinic acid have been given orally without producing headache, but we have never advocated doses that large. The reason the skin of the face is used to determine the cutaneous temperature is that the variation here is more marked than elsewhere; the reaction lasts longer and comes on more rapidly. Occasionally when large oral doses of nicotinic acid are given or when it is given intravenously, the entire body shows a flush and the cutaneous temperature of the extremities will increase also but not as extensively. The temperature in the legs may actually fall. When the material is given intravenously, the flushing begins in from one to five minutes, reaches an acme in from seven to ten minutes, decreases from there on and finally ends within thirty minutes to one hour. Cutaneous temperature usually remains high after the subject has a return of sensation of coolness. Flushing usually begins in the face within half an hour when the material is given orally and tapers off in the ensuing half hour, but this varies considerably in different individuals. The flush usually has disappeared within half an hour after intravenous administration and within an hour if the nicotinic acid is taken orally.

Vitamin K Activity of 2-Methyl-1, 4-Naphthoquinone

DR. E. A. SHARP, Detroit: Twelve patients showing prolonged prothrombin time (Quick's method) have been treated with 2-methyl-1, 4-naphthoquinone in doses of 0.6 mg. (1,000 Thayer-Doisy units) to 2.4 mg. (4,000 Thayer-Doisy units) daily. The prothrombin time is restored to normal in a majority of instances as promptly with this substance as after the use of natural vitamin K. No toxic manifestations were encountered in this series.

DISCUSSION

DR. ARMAND J. QUICK, Milwaukee: I feel, after listening to this presentation, that the chemical chapter on vitamin K is approaching completion. The chemists have done notable work in solving the structure of vitamin K, but one is now forced to go back to the clinical study. It is known that vitamin K is of greatest importance both in jaundiced patients and in newborn infants with hemorrhage. In the case of jaundiced patients the real problem now is to know how much vitamin K to give, because the liver is an important factor in the utilization of vitamin K in order to change it into the prothrombin component. The response the jaundiced patient gives is variable. I have seen a patient with a prothrombin level of 8 per cent which was increased to 80 per cent within twelve hours with vitamin K. On the other hand, some patients with a prothrombin concentration of from 20 to 30 per cent when given large doses of vitamin K show a tardy response and require days of treatment before the prothrombin reaches the proper level. Therefore the question now is how to correlate liver function and vitamin K; I think the research that must be done is to determine liver function on the patient and then correlate it with the patient's response to vitamin K. I am convinced, from the surgical point of view, that patients with good liver function and a low prothrombin level are better off than patients with poor liver function and relatively high prothrombin concentration.

DR. G. O. BROWN, St. Louis: Through Dr. Doisy and Dr. Kamm I have had the opportunity of using some of the compounds that Dr. Sharp has described. The one with which I have had the most experience is K-5 (4 amino, 2 methyl, 1 naphthol hydrochloride). This material is water soluble and can be given intravenously. By using a single dose of 5 mg. I have had a definite effect on the prothrombin time extending over a period of several days. Also there has been evidence of prompt action in my cases. The drop in prothrombin time will sometimes occur within two hours after administration of the drug. The use of these compounds will do away with the uncertainty of absorption from the intestinal tract. I agree with Dr. Quick that one must bear in mind in all cases in which vitamin K and similar preparations are used that in the presence of severe liver damage vitamin K cannot be utilized. Therefore, in some cases with marked impairment of liver function one cannot expect to get the drop in prothrombin time which will render the patient safe for surgical intervention.

DR. E. A. SHARP, Detroit: I agree with Drs. Quick and Brown as to the clinical application of these compounds and trust that, as time passes, knowledge will develop as to the efficacy of the substance and also as to the schedule of dosage.

Relationship Between Iron and Ascorbic Acid Metabolism

CARL V. MOORE, M.D., HOWARD BIERMAN, M.D., and VIRGINIA MINNICH, M.S., St. Louis: Certain reducing substances, notably ascorbic acid and sodium formaldehyde sulfoxylate, have been shown to enhance the absorption of iron from the gastrointestinal tract. This observation and the suggestion by McFarlane that after iron leaves the blood stream it may be reduced by ascorbic acid in the tissues led us to analyze the possible relationship between iron and vitamin C metabolism. The following observations have been made:

1. Intravenous injection of highly ionized simple ferrous and ferric salts caused a temporary total disappearance of titratable vitamin C from the plasma. Parenteral administration of large amounts of ascorbic acid or of sodium formaldehyde sulfoxylate did not, however, hasten the rate at which iron was removed from the blood stream.

2. Rises in serum iron which occurred after the ingestion of large amounts of soluble ferrous or ferric salts were frequently attended by definite decreases in plasma ascorbic acid. That this decrease was not the result of localized concentration of ascorbic acid in the intestinal tract (as a reducing substance to stabilize the iron in its ferrous state) seems likely, since there was no correlation between the amount of iron absorbed by a given patient and the level of ascorbic acid in his blood plasma.

3. In vitro analysis of the reaction by which high levels of serum iron caused the oxidation of ascorbic acid showed that at least three substances were involved in the reaction: (1)

serum iron, (2) vitamin C and (3) an unidentified plasma component. The fact that this reaction could be inhibited by concentrations of 0.2 millimol of sodium cyanide but not by 0.5 mg. of glutathione per hundred cubic centimeters suggests that the third factor involved in the equation is a hemochromogen. Further analysis revealed the existence of a protective substance in plasma which normally protects against the oxidation of the ascorbic acid it contains. The biologic significance of this oxidative mechanism is not immediately apparent.

4. When iron was given in full therapeutic doses during a period of four months to "normal" subjects there was no tendency for the plasma vitamin C to fall to scorbutic or pre-scorbutic levels. Likewise, daily intravenous injections of ferrous sulfate to dogs for three or four weeks was without apparent influence on the fasting ascorbic acid values in the plasma. In any event the protective mechanism just mentioned was adequate to protect against the oxidation of plasma ascorbic acid by the quantities of iron administered therapeutically.

No specific relation between iron and ascorbic acid metabolism has been observed. However, an interesting oxidation in which plasma iron reacts with an unidentified plasma component, possibly a hemochromogen, to oxidize the plasma ascorbic acid has been described. A protective mechanism efficient enough under normal circumstances to prevent the in vivo oxidation of ascorbic acid by this mechanism has also been demonstrated. The biologic significance of these relationships is not at present apparent.

DISCUSSION

DR. HOWARD L. ALT, Chicago: I have found no consistent difference in the plasma ascorbic acid between patients with pernicious anemia and those with iron deficiency anemia. The former group have a high concentration of serum iron and the latter a low concentration. I should like to ask Dr. Moore whether ascorbic acid is destroyed by iron or whether it can again be converted to the active reduced state. If ascorbic acid is completely destroyed, it seems possible that large doses of iron given to a patient receiving a vitamin C deficient diet might hasten the appearance of a vitamin C deficient state. This effect could be studied by giving guinea pigs receiving a scorbutogenic diet large doses of iron to see whether scurvy appears sooner than in a control group.

DR. CHESTER J. FARMER, Chicago: I am inclined to believe that Dr. Moore has the proper explanation relative to reduction of iron in the intestinal tract by ascorbic acid. I doubt that ascorbic acid is excreted from the blood back into the intestinal tract because if it is excluded from the diet and as much as 1 Gm. of ascorbic acid daily is given intravenously over a consistent period of time with collection of the urine and feces and a metabolism experiment, the ascorbic acid in the feces is not of a demonstrable amount. It will be present in the urine but with massive doses we have been unable to show any excretion from the blood stream back into the intestinal tract. Therefore I doubt that there could be any reduction of iron due to a high blood ascorbic acid level.

DR. W. S. HOFFMAN, Chicago: I should like to ask whether any other substances in the blood would produce a similar reduction in the concentration of vitamin C.

DR. PAUL STARR, Chicago: Holmes has reported the beneficial effect of giving 200 mg. of vitamin C in lead poisoning, with decreased production of lead in the urine. I wonder if this would have any relationship to Dr. Moore's observations concerning vitamin C.

DR. CARL V. MOORE, St. Louis: The vitamin C is apparently irreversibly oxidized. At least all our attempts to recover it with the hydrogen sulfide technic which causes the reversion of the dehydro form to ascorbic acid have been unsuccessful. The only other heavy metals of which the effect has been studied in these experiments are arsenic, cobalt and copper. Cobalt in amounts comparable to the quantities of iron used does not oxidize ascorbic acid. Arsenic and copper do, of course, destroy the vitamin but need no third substance like the plasma component described to complete the reaction. Their effect is different from that of iron. We have not tried the effect of lead.

(To be continued)

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

37: 329-492 (Nov.) 1939. Partial Index

Development of Fibrosarcoma as Result of Intra-Articular Injection of Radium Chloride for Therapeutic Purposes: New Form of Radium Poisoning in Human Beings. F. Nørgaard, Copenhagen, Denmark.—p. 329.

Leukemia in F Strain of Mice: Observations on Cytology, General Morphology and Transmission. A. Kirschbaum and L. C. Strong, New Haven, Conn.—p. 400.

Relationship of Hormones and Mammary Adenocarcinoma in the Mouse. A. Lacassagne, Paris, France.—p. 414.

*Possible Relationship Between Primary Cutaneous Xanthomas and Melanomas. N. C. Foot, New York.—p. 425.

Bronchogenic Carcinoma with Subcutaneous Metastases. H. Charache, New York.—p. 431.

*Mixed Mesodermal Tumors of Uterus and Vagina: Report of Six Cases. A. L. Amolsch, Detroit.—p. 435.

Possible Biologic Significance of Interactions Between Polycyclic Hydrocarbons and Sterols in Surface Films. G. H. A. Clowes, W. W. Davis and M. E. Krahl, Indianapolis.—p. 453.

Primary Cutaneous Xanthomas and Melanomas.—Foot believes that the cutaneous xanthoma may be removed from the general group of xanthomas and set more or less by itself in a separate category. Such tumors are frequently found in the skin, cause a local swelling and form a hard, globular, rather fixed mass just in or beneath it. There may also be a spot of brownish pigmentation in the epidermis overlying the mass, not readily distinguishable from the ordinary deep-seated melanoma. These are sharply delimited by a fibrous capsule that sets them off distinctly from the surrounding areolar and adipose tissue. Their surfaces, when sectioned, are usually homogeneous and putty-like in appearance and of a striking ochraceous-orange color. Those of the overlying skin may show a spot of brownish pigmentation. Microscopically the tumors are seen to be composed of vacuolated cells of irregular outline occupying the meshes of a dense, curled, radiating rete of collagenous connective tissue. The dense radiating collagenous stroma, with its "curly" appearance, suggests a neurogenic origin, though the presence of vacuolated cells in the meshes of this rete apparently diverts one's attention from this similarity. Several of these tumors were subjected to a modification of the Ramon y Cajal silver method of block impregnation. Nonmedullated neurofibrils were readily demonstrable. They course in the trabeculae of the stroma either singly or in bundles. They are almost invariably devoid of myelin sheaths. Occasionally they appear to enter the cell nests, there to be lost without forming definite bulbs, loops or other endings. There are usually several large trunks of myelinated nerves at the base of the tumor, which penetrate the trabeculae, lose their sheaths and continue along the septa toward the skin, where they ramify beneath the epidermis and become sparsely distributed. In one tumor, overlying the xanthomatous lesions a well developed melanoma, which did not differ materially from the ordinary pigmented nevus, was found. The cells of its deeper portions became merged with the vacuolated cells of the more deeply situated xanthoma. Not only do the xanthoma and melanoma show a similarity in the presence and distribution of neurofibrils, but Meissner corpuscles cannot be demonstrated in either. Apparently the cells destined to form these are diverted from the derma to the tumor and never differentiate completely. Another point of similarity that should be stressed is the presence, in both groups, of pigmented melanophores, possibly also of melanoblasts. Occasionally there are multinucleated giant cells, with or without contained pigment. Block impregnations were made of cutaneous fibromas, angiomas, fibrosarcomas, hair-matrix or

basal-cell carcinomas, and neurogenic subcutaneous sarcomas. No considerable number of neurofibrils could be demonstrated in any of these save the last named, which showed bundles and fibrils exactly similar to those just described. Therefore the author thinks that in this form of xanthoma one is dealing with a tumor that has a philogenic position intermediate between that of the melanoma, which is terminal on the nerves, and the lemmoma and neurofibroma, which may occur along their course. The xanthoma might be said to have a "sub-terminal" position on the peripheral nervous tree. With this hypothesis in view, the vacuolated cells of the growth immediately suggest units of the sheath of Schwann, which are normally vacuolated and contain lipids. They would then differ materially from mere "lipophages" or histiocytes, both in their origin and in their morphology. The frequent association of xanthomas with melanomas and the gradual merging of the one into the other would then be readily comprehensible, as the type cell would in each case be a modified Schwann cell. That such tumors have malignant analogues the author shows by presenting a case in which the vacuolated cells are replaced by less mature fusiform components that resemble fibroblasts and may or may not show vacuolization. Thus the innocent members of the group show foam cells that lie in the meshes of a dense collagenous network, while the malignant varieties have exactly the same general topography, though the type cells are denser and smaller and tend to be fusiform. The hypothesis submitted suggests that there are subcutaneous xanthomas that differ from the usual tumors so named, as their stroma suggests a neurogenic type of neoplasm and their cells resemble both those of the sheath of Schwann and those of some melanomas. The presence of readily demonstrable bundles of nonmyelinated nerve fibers in their stroma further heightens their similarity to melanomas. Transitions between the two types of neoplasm can be found in selected cases.

Mixed Mesodermal Tumors of Uterus and Vagina.—Amolsch reports six cases of heterotopic mesodermal tissue; one was primary in the lower vagina, four involved the cervix and one had its origin in the body of the uterus. One tissue component was common to all, embryonic myxomatous tissue. Botryoid tumors acquire their gross appearance largely because of the dominance and rapidity of growth of myxomatous tissue in a submucous position in a spacious hollow viscus, such as the vagina. All these tumors formed mucosal polyps. In each case the pathologic diagnosis was benign polyp. The vaginal tumor (in an infant) was recognized as a rhabdomyoma, but the case was treated expectantly as a benign lesion. The malignant nature of these tumors was not appreciated until recurrence had developed. In the absence of other evidence of mixed mesodermal tissues, it is the author's opinion that myxomatous tissue, which is an embryonic structure, should be accepted as strong presumptive evidence of the probable mixed mesodermal nature of these polyps and the malignant character of such a tumor should be appreciated. These tumors may be simple in tissue structure. They may be benign, as in the case of the rare lipomas of the uterus. More frequently they are of complex structure and malignant in behavior. The recognition of the true nature of these primary polyps is important, as early complete hysterectomy with intensive irradiation appears to offer the greatest possibility for their control or eradication.

American Journal of Orthopsychiatry, Menasha, Wis.

9: 669-842 (Oct.) 1939. Partial Index

The Sex Offender: Psychiatric Study. J. Frosch and W. Bromberg, New York.—p. 761.

The Psychiatric Social Worker Looks at the School. Ethel L. Ginsburg, New York.—p. 777.

Block to College Mental Hygiene Programs: Denial of Spontaneous Self of Student. J. A. Rose, Philadelphia.—p. 786.

*Relative Effectiveness of Stanford-Binet and Bellevue Intelligence Scale in Diagnosing Mental Deficiency. B. Balinsky, H. Israel and D. Wechsler, New York.—p. 798.

Comparison of Stanford-Binet and Bellevue Intelligence Tests.—Balinsky and his associates determined the intelligence quotients of two groups of patients and at the same time they compared the relative effectiveness of the Stanford-Binet and the Bellevue intelligence quotient tests. The subjects used were sixty-three patients examined at Bellevue

Hospital during 1933 and 1934. Of these cases forty had been recommended and twenty-three not recommended to state institutions for mental deficiencies. The second group consisted of 134 subjects all of whom had been examined in Bellevue Hospital between December 1937 and March 1939. Of these, seventy had been recommended for institutionalization. Examination of the data obtained reveals the following: 1. The Bellevue full scale intelligence quotients give systematically the highest correlations with psychiatrists' recommendations in each investigated group. 2. The Bellevue verbal intelligence quotients give the second highest correlations in the first group and third highest in the second group. 3. The Bellevue performance intelligence quotients give the lowest correlations in the first group and second highest in the second group. 4. The Stanford-Binet intelligence quotients give the third highest correlations in the first group and the lowest in the second group. These results indicate a marked superiority of the Bellevue full scale over the Stanford-Binet in the effectiveness of the tests as instruments in clinical diagnosis of mental deficiency. This superiority is even more effectively brought out if, instead of merely considering the numerical values of the coefficients of correlation, they are translated into their prognostic efficiencies. When this is done the forecasting efficiencies (as obtained from the bi-serial recommendations of the second group) of the Bellevue test turn out to be about 40 per cent as against only about 5 per cent for the Stanford-Binet test. The results also suggest the importance of including performance tests when attempting to differentiate between borderline intelligence and mental deficiency. The low forecasting efficiency of the Stanford-Binet test in differentiating between the borderline and high grade defective groups accounts, in part at least, for the frequent complaint of psychiatrists that the Stanford-Binet test cannot be used alone in the diagnosis of mental deficiency.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

42: 637-796 (Nov.) 1939. Partial Index

- Syphilis of Skeleton in Early Infancy: Nonspecificity of Many of Roentgenographic Changes. J. Caffey, New York.—p. 637.
Anterior and Posterior "Notch" Shadows Seen in Lateral Roentgenograms of Vertebrae of Infants: Anatomic Explanation. G. Wagoner and E. P. Pendergrass, Philadelphia.—p. 663.
Madelung's Deformity: Consideration of Its Roentgenologic Diagnostic Criteria. M. Dannenberg, J. I. Anton and M. B. Spiegel, Brooklyn.—p. 671.
Unilateral Enlargement of Lower Extremity Accompanying Varicose Veins, with Roentgen Studies of "Deep Venous Block." H. I. Biegeleisen, New York.—p. 683.
Roentgen Diagnosis of Renal Infection. E. L. Shiflett, Louisville, Ky.—p. 689.
Effect of Small Stones on Renal Function. J. A. Bowen and J. R. Stites, Louisville, Ky.—p. 693.
Renal Tuberculosis: Pathogenesis and Roentgen Findings. H. K. Taylor, New York.—p. 700.
*Roentgenologic Visualization of Soft Tissues in Pregnancy. W. Snow and M. Rosensohn, New York.—p. 709.
*Roentgenologic Visualization of Soft Structures of Pregnancy: Experimental Evidence. S. Weintraub and W. Snow, New York.—p. 718.
*Radium Treatment of Angioma in Children. R. Paterson and Margaret C. Tod, Manchester, England.—p. 726.
Irradiation with Small Doses in Treatment of Functional Gynecologic Conditions. I. I. Kaplan, New York.—p. 731.
Effect of Heavy Filtration on Skin Tolerance and Depth Dose. R. Dresser and A. Meltzer, Boston.—p. 756.
Method of Obtaining Greater Ratio of Deep to Surface Dosage. S. J. Hawley, Danville, Pa.—p. 760.

X-Ray Visualization of Soft Tissues in Pregnancy.

Snow and Rosensohn discuss studies of the x-ray visualization of the soft parts of late pregnancy. Their procedure is to inject air into the bladder. This aids in tissue differentiation. They have visualized the uterine wall, placenta, varying degrees of hydramnios, intra-uterine hemorrhage and even the amniotic sac. The importance of recognizing these structures is obvious. The technic is entirely devoid of danger and they have succeeded in making a positive diagnosis in late extra-uterine pregnancy as well as in some tumors causing dystocia.

Experiments in X-Ray Visualization of Pregnancy Tissues.—Weintraub and Snow again draw attention to the black line of demarcation seen between the fetus and the placenta on x-ray examination. Experimental proof (roentgenograms of a stillborn fetus) is presented to show that the blackening of the film is evidence of the fetal subcutaneous

fat. Vernix caseosa does not produce the shadow under consideration. Instead vernix caseosa casts a shadow of the same degree as that caused by muscle. An in vitro roentgenogram of a hydramnios was identical with a roentgenogram originally recognized in vivo by Snow and Rosensohn.

Radium Treatment of Angioma.—Paterson and Tod state that 150 children with angioma were treated from 1933 to 1936 at the Manchester Radium Institute with radium. The children attend for only about a year after the lesion is considered to be cured. Such treatment is seen to be effective and when properly controlled is without danger. Of the 150 children 129 are considered well. The essentials are repeated low doses at correct intervals; this the authors suggest to be 1,500 roentgens every two months, although other arrangements will be equally effective. If dosage is carefully calculated, and treatment is not continued indefinitely when it is obvious that a tumor of unusual resistance has been encountered, a good cosmetic result without risk of damage to the skin may be expected. In all 129 cases the angioma has completely disappeared, and when scars are present they were often the result of attempts to treat the angioma with solid carbon dioxide before the institution of radium therapy, or the thin skin over the lesion accentuates the slight degree of atrophy following irradiation. In some cases the slight scar stands out because of lack of pigment when the complexion is dark or the child is sunburned.

American Journal of Surgery, New York

46: 411-746 (Dec.) 1939. Partial Index

- Anesthesia for Emergencies. L. F. Sise, Boston.—p. 413.
Shock: Consideration of Prevention and Treatment. R. D. Cressman and A. Blalock, Nashville, Tenn.—p. 417.
Maintenance of Fluid Balance. W. G. Maddock, Ann Arbor, Mich.—p. 426.
Septicemia, Including Acute Infections of Scalp. F. L. Meleney, New York.—p. 435.
Prevention and Treatment of Tetanus. W. M. Firor, Baltimore.—p. 450.
*Studies on Hexyl-Chloro-M-Cresol and Other Carbocyclic Antiseptics. F. W. Hartman and V. Schelling, Detroit.—p. 460.
Surgical Aspects of Otitis Media, Peritonsillar Abscess and Retropharyngeal Abscess. L. Richards, Boston.—p. 505.
Tracheotomy. C. Jackson and C. L. Jackson, Philadelphia.—p. 519.
Contusions, Crushing Injuries and Wounds of Thorax. W. D. Andrus and C. W. Holman, New York.—p. 542.
Emergency Surgery of Heart. D. C. Elkin, Atlanta, Ga.—p. 551.
Appendicitis. A. Ochsner and S. Murray, New Orleans.—p. 566.
*Acute Cholecystitis. R. R. Graham, Toronto.—p. 585.
*Acute Pancreatitis. L. S. Fallis, Detroit.—p. 593.
Diverticulitis. C. F. Dixon, Rochester, Minn.—p. 609.
*Acute Perforations of "Peptic" Ulcers. H. H. Trout, Roanoke, Va.—p. 621.
Treatment of Acute Massive Hemorrhage in Peptic Ulcer. S. F. Marshall and E. D. Kiefer, Boston.—p. 625.
Rupture of Bladder and Acute Retention of Urine. W. K. Rexford, Detroit.—p. 641.
Salpingitis and Pelvic Cellulitis. C. B. Ingraham and W. W. Tucker, Denver.—p. 653.
Fractures and Fracture Dislocations of Spine. J. Dunlop, Pasadena, Calif.—p. 681.
Surface Defects of the Hand. J. B. Brown, St. Louis.—p. 690.
Acute Infections of Extremities. D. Hart, Durham, N. C.—p. 711.

Carbocyclic Antiseptics.—The present study emanated from Hartman and Schelling's desire to find a substance of high bactericidal activity and low tissue toxicity to be used in conjunction with tannic acid in the treatment of burns. Many carbocyclic derivatives have been synthesized and have been proved to be highly effective antiseptics, but the authors wish to emphasize only two (dichloro-hexyl resorcinol and hexyl chloro-m-cresol), since only these have received extensive clinical trial as well as exhaustive laboratory tests. These compounds are heavy, colorless liquids or white solids, are practically odorless and are sparingly soluble in water. Dichloro-hexyl-resorcinol and hexyl chloro-m-cresol are unusually effective bactericidal substances, especially against staphylococci, streptococci, pyocyanus and the gram-negative bacilli when their solutions are acidified to pH 3 with hydrochloric acid or other acids. Toxicity, both locally and systemically, is comparatively low, so that danger from absorption or ingestion of 1:1,000 solutions is negligible. A highly satisfactory performance in an extended clinical trial coupled with laboratory tests showing low toxicity for tissue cells and unusual effectiveness against bacteria indicates that these substances are the most acceptable general antiseptics.

Acute Cholecystitis.—In the surgical service at the Toronto General Hospital, emergency operations for acute cholecystitis are not advocated by the university staff. The continued publication of data by men of unquestioned repute, experience and sound surgical judgment, urging that patients suffering from acute cholecystitis be considered as suffering from a disease demanding as immediate surgical intervention as though they were suffering from acute appendicitis, is so at variance with this practice that all patients admitted to the hospital, medical and surgical, from July 1926 to January 1934 were studied. The result of this study was such as to justify the continued conservative management of this group of patients. A further analysis, from January 1934 to July 1939, of such material was made by Graham. This last group is confined to the patients admitted to the First Surgical Division, together with the private patients operated on by the author. This entire series consists of 273 cases. There was a total of sixteen hospital deaths. This included patients who refused operation, patients for whom operation was not advised and those who were submitted to operation. This gives a gross mortality of 5.8 per cent. In an analysis of the ninety cases in which no operation was carried out there were six hospital deaths. Twenty-six patients were advised and refused operation, three were in a moribund state when admitted (at necropsy all had stones in the common bile duct) and three died from cardiovascular diseases, for whom it was never possible to consider operation. In the selection of the cases analyzed great care was taken to make sure that the diagnosis was definitely established. Of the ninety patients who either refused operation or for whom operation was not advised there were only six who died, and none of them, the author believes, would have been alive had urgent operation been carried out. That some of the remaining eighty-four patients not operated on may ultimately die from acute cholecystitis is possible, as twenty-six were advised operation. This leaves fifty-eight patients for whom, for various reasons, operation was not advised, and if they die subsequently it will be due to the frailty of human judgment, as their discharge without operation was considered in their best interest. That acute cholecystitis should be considered a disease parallel to acute appendicitis the staff members cannot bring themselves to believe. There were only three cases of general peritonitis, and of 164 patients in the surgical group having delayed operation there were eleven who had a perforation of the gallbladder with a pericholecystic abscess and no general peritonitis, none of whom died of original perforation or of the later operation. This tremendous difference between the localization and the diffuseness of the inflammatory reaction as seen in acute cholecystitis and in acute appendicitis, the author suggests, should of itself be sufficient to demand considering these two disease processes as presenting entirely dissimilar problems. It is not believed that acute cholecystitis in Toronto is any different from acute cholecystitis elsewhere. What, then, the author asks, can explain their apparent placidity in the face of a serious disease? It must resolve itself entirely into a question of terminology. The staff members of the Toronto General Hospital believe that there are three distinct pathologic entities that in many of the reported publications are called acute cholecystitis and thus confuse the real issue: (1) biliary colic, (2) acute cholecystitis and (3) acute cholangitis. Therefore it is concluded that many of the patients operated on within the first forty-eight hours from the onset of the pain are really being operated on for persistent biliary colic. That this procedure is unwise is not suggested, but it is concluded that it is not necessary to save life. Acute cholecystitis with infection presents a history of biliary colic, a palpable tender mass in the right upper quadrant, increased temperature and pulse rate, leukocytosis and occasional jaundice. For such a patient urgent operation to save life is not wise. If, after the restoration of biochemical balance, pain is undiminished despite adequate sedation or if the pulse rate rises or remains persistently high, direct surgical intervention is indicated. The delay necessary to restore biochemical balance enables the occasional operator to marshal all available resources. In the 164 delayed operations there was a mortality of 4.2 per cent, leading to the conclusion that in such a serious disease this mortality is not forbidding.

Acute Perforations of "Peptic" Ulcers.—In about half of the seventy-one cases of acute perforations that Trout considers it was difficult to obtain, before operation for the perforation, any definite history that would suggest the existence of the ulcer before its perforation. Many of the patients had their perforations following an overindulgence in food and fluids, often alcoholic. Properly executed surgery offers the best hope of recovery. Each case presents a separate individual problem and depends on the conditions found after the abdomen is opened. Extensive operative procedures should not be done in an infected field. If the history of the perforation is of sufficient duration to have allowed an extensive peritonitis to develop, the less manipulation done in such a field the better for the patient. While the surgeon is isolating the perforation and applying whatever operative procedure is indicated, the peritoneal cavity should be cleaned, preferably by aspiration. It is important to aspirate the food and other gastric contents from the pelvic cavity and iliac fossae, to which such material frequently gravitates. Unless there is some definite indication to the contrary, it is the author's practice simply to close the ulcer with No. 1 chromic catgut sutures. In a few cases, in which the infiltration surrounding the perforation has been extensive and the condition of the patient precarious, he has sutured a small portion of the omentum over the opening. Frequently in these cases the omentum is found in the neighborhood of the opening, as if it were attempting to plug or close the perforation without "surgical aid." Some years ago it was thought that a posterior gastro-enterostomy at the time of the closure of the perforation gave relief from postoperative gastric distention. At the present time continuous suction through the small duodenal tube prevents gastric distention, and therefore this excuse for the addition of a gastro-enterostomy no longer exists. Continuous suction almost entirely eliminates postoperative vomiting and "gas pains." The solution of the question as to whether to employ drainage after these perforations is only another instance of selecting the proper procedure for the individual case. Frequently drainage, if placed close to the site of closure of the perforation, will be followed by the formation of a gastric or intestinal fistula with all its distressing results. If peritonitis has been sufficient to allow the formation of localized abscesses, these are drained by cigaret drains; but gauze is never placed near the closed perforation.

Annals of Internal Medicine, Lancaster, Pa.

13: 749-914 (Nov.) 1939

- Vitamins in Theory and Practice. H. B. Lewis, Ann Arbor, Mich.—p. 749.
Discussion of Therapeutic Test and Provocative Test in Gouty Arthritis. L. M. Lockie, Buffalo.—p. 755.
Statistical Study of Allergy in Arthritis. E. F. Traut and E. G. Vrtiak, Chicago.—p. 761.
*Active Immunization Against Tetanus. H. Gold, Chester, Pa.—p. 768.
Effect of Roentgen Ray on Blood Catecholaminases I and II. W. B. Bean, R. W. Vilter and T. D. Spies, Cincinnati.—p. 783.
Use of Dilantin in Treatment of Epilepsy. O. P. Kimball, Cleveland, and T. N. Horan, Detroit.—p. 787.
Some Studies in Mechanism of Cardiac Hypertrophy. G. Herrmann and G. M. Dechard Jr., Galveston, Texas.—p. 794.
Method of Testing Cardiac Function. D. G. Stine, Columbia, Mo.—p. 807.
Roentgen Procedures Useful in Cardiac Diagnosis. F. J. Hodges, Ann Arbor, Mich.—p. 826.
*Deep Injection of Novocain for Relief of Pleural Pain. S. Schnur, Houston, Texas.—p. 845.
Initial Management of Tuberculosis, with Special Reference to Psychology of the Patient. L. J. Moorman, Oklahoma City.—p. 849.
Limitations of Government in Medicine: San Francisco Experience. J. C. Geiger, A. E. Larsen and J. P. Gray, San Francisco.—p. 856.

Active Immunization Against Tetanus.—According to Gold, the antitoxin titer produced by the injection of tetanus toxoid and the influence exerted on this titer by such factors as dosage, time interval between injections, associated antigens and "repeat" or stimulating injection of toxoid have been the subject of careful investigation. In this paper the author reports his observations on the comparative value of various antigenic preparations. Tetanus toxoid (plain), tetanus toxoid (plain) to which 0.4 per cent alum was added and alum precipitated tetanus toxoid (refined) were used for active immunization of thirty-two healthy persons from 14 to 28 years of age. Twelve persons (group A) were immunized by means of three 1 cc. injections of tetanus toxoid plain. The period between injections was varied in order to determine the inter-

The treatment of patients who have relatively infrequent attacks is more difficult. It is advisable that these patients receive more than the minimum amount of therapy. The authors have obtained good results in several such cases by giving from 0.4 to 0.5 Gm. (from 6 to $7\frac{1}{2}$ grains) of dilantin sodium daily, even though most attacks were prevented by a smaller dose. The toxic reactions which attend the use of dilantin sodium are of a different character from those observed with phenobarbital and the bromides. The drowsiness which the last two drugs produce and the rashes which often follow the use of bromides are rarely seen. Instead, a new group of symptoms is observed with high doses. Judging from animal experiments and clinical experiences thus far, danger to life should be less than that from bromides or phenobarbital. The percentage of minor, toxic reactions is probably greater than that encountered with other forms of therapy, such as phenobarbital. The authors conclude that dilantin sodium is the most effective anticonvulsive drug that they have used and they advise its use for patients who are not free from symptoms with other forms of treatment.

Tryparsamide and Bismuth Compounds in Dementia Paralytica.—Modern methods of treatment of dementia paralytica having been followed by frequent relapses, Forman decided to apply intensive and continuous treatment with tryparsamide and bismuth compounds alone or after malariotherapy until reversal of the positive syphilitic reaction of the cerebrospinal fluid. Thirty-eight patients with dementia paralytica were treated intensely and continuously, for periods varying from ten months to seven years, with the maximum doses of tryparsamide and thio-bismol until the Wassermann reaction of the spinal fluid was negative or until death supervened. Eighty-four per cent of this group also received malarial treatment in the beginning. Of the series, 28.4 per cent showed complete and 18.4 per cent partial remission; 36.7 per cent were unimproved or slightly improved; 5.2 per cent died of causes other than dementia paralytica, and 10.5 per cent died presumably of dementia paralytica. Of the entire group 2.6 per cent after showing a negative Wassermann reaction of the spinal fluid had a reversal to positive. In all of the 84.2 per cent who are living, reversal of the Wassermann reaction of the spinal fluid to negative was effected. There have been no clinical relapses. The only evidences of progression are represented by deaths due to dementia paralytica in 10.5 per cent of the cases. These results bear out the opinion and clinical evidence that, although clinical improvement in dementia paralytica following modern methods of treatment shows no relation to the improvement in the spinal fluid, nevertheless a reversal of the Wassermann reaction of the spinal fluid to normal is an especially desirable feature. The observations also indicate, first, that continuous and intensive treatment with tryparsamide and the heavy metals, until the Wassermann reaction of the spinal fluid is negative, whether or not fever treatment has been given, is effective in preventing relapse or progression while treatment is in progress; second, that it is effective in promoting the reversal of the positive syphilitic reaction in the spinal fluid in 100 per cent of those who do not die of the disease before the Wassermann reaction of the spinal fluid becomes negative, and, third, that it reduces the incidence of progression of the disease. The fact that in a small percentage of cases the negative Wassermann reaction of the spinal fluid became positive again indicates the necessity of examination of the spinal fluid at regular intervals for years after a negative reaction has been obtained.

Archives of Physical Therapy, Chicago

20: 657-720 (Nov.) 1939

- Intravaginal Treatment of Pelvic Inflammation by Controlled Superheated Air: Preliminary Report. F. H. Falls, L. B. Newman and D. Kobak, Chicago.—p. 661.
Portable Whirlpool Bath. R. S. Emerson, Hempstead, N. Y.—p. 671.
Rational Ultraviolet Therapy and Skin Sensitometry. J. Saidman, Paris, France.—p. 673.
Vascular Spasm in Experimental Gastric Ulcer. A. J. Nedzel, Chicago.—p. 683.
New Means of Experimental Physicodiagnosis. P. Liebesny, New York.—p. 687.
Carcinoma of Cervix: Early Diagnosis and Treatment. W. Hofmann, Indianapolis.—p. 695.

Arkansas Medical Society Journal, Fort Smith

36: 149-172 (Dec.) 1939

- Prolonged First Stage of Labor. L. Rudolph, Chicago.—p. 149.
Obstetrics in the Small Hospital. J. H. Wilson, Magnolia.—p. 156.

Bulletin New York Academy of Medicine, New York

15: 769-824 (Dec.) 1939

- Address of Welcome Twelfth Graduate Fortnight. M. Goodridge, New York.—p. 771.
Hypothalamic-Pituitary Syndromes. L. Lichtwitz, New York.—p. 773.
Physiology and Principal Interrelations of Thyroid Gland. D. Marine, New York.—p. 790.

Canadian Public Health Journal, Toronto

30: 469-516 (Oct.) 1939

- Diphtheria Toxoid: Review. D. T. Fraser, Toronto.—p. 469.
Program of Medical Care in Manitoba. F. W. Jackson, Winnipeg, Man.—p. 479.
Scarlet Fever Immunization in Edmonton, Alta. G. M. Little, Edmonton, Alta.—p. 488.
Population Estimates. M. C. MacLean, Ottawa, Ont.—p. 491.
Outbreak of Acute Anterior Poliomyelitis in Alberta During the Winter Season. A. C. McGugan, Edmonton, Alta.—p. 495.

30: 517-566 (Nov.) 1939

- Industrial Hygiene from the Public Health Aspect. J. A. Baudouin, Montreal.—p. 517.
Scope of Medical Services in Industry. A. M. Mitchell, Montreal.—p. 521.
Industrial Hygiene in Ontario. J. G. Cunningham, Toronto.—p. 524.
Industrial Hygiene in the Province of Quebec. F. J. Tourangeau, Quebec, Que.—p. 527.
Industrial Poisons Problem in Canadian Industry. F. G. Pedley, Montreal.—p. 530.
Neuroses in a Large Office Group. F. S. Parney, Ottawa, Ont.—p. 534.
Practice of Preventive Medicine by a General Practitioner Among Employees in a Small Factory. H. M. Harrison, Toronto.—p. 541.
Provision of Nursing Services and Medical Care in a Group of Small Factories. F. R. Griffin, Toronto.—p. 545.
Control of Sickness in a Large Group of Lumber Camp Workers. W. I. Taylor, Cannington, Ont.—p. 547.
Cardiovascular Disease Among Railway Employees. K. E. Dowd, Montreal.—p. 550.
*Gastrointestinal Diseases Among Steel Workers. F. E. H. Day, Hamilton, Ont.—p. 555.

Gastrointestinal Diseases Among Steel Workers.—Day states that the importance of gastrointestinal diseases among steel mill workers can best be assessed by the amount of time lost because of these diseases as compared with the time lost from other diseases. During 1938 at a steel plant which had an average payroll of 3,200 gastrointestinal diseases accounted for 2,377 days of lost time in contrast with 946 lost days occasioned by respiratory illnesses and 881 days by cardiovascular diseases. Steel workers present a particular problem in digestive ailments because of circumstances connected with their habits. The changing weekly shift is undoubtedly an important influence in the prevalence of gastric and intestinal disorders. Frequently the indigestion of a patient will improve satisfactorily until he starts night work, when indigestion immediately recurs. The very type of work, with its intense heat, gas and dust, predisposes to the occurrence of digestive disorders. All the employees carry lunches, which are eaten in a thirty minute rest period or, more often, a sandwich is snatched during a pause in the mill. One wonders what influence a regulated midshift meal would have on the incidence of digestive and intestinal upsets. The subject is considered with regard to the occurrence of "peptic ulcers." The 3,200 workers consist at the present time of 3,089 men in the factory and 191 members of the office staff, seventy-five of whom are girls. There have been no peptic ulcers as far as is known among the seventy-five women employees, but in contrast to this eighty men with positive x-ray diagnoses of ulcer are under observation and there is a record of one death from a perforation. This gives an incidence of 2.16 per cent. This figure the author believes is extremely low, as postmortem observations show scars of ulcer in about 10 per cent of the cases. Therefore the incidence is probably five times the number under observation. Five patients with complicated ulcers accounted for 126 days lost. The remaining seventy-six patients with ulcer were absent from work for only eleven days in one year. There are seventy-four duodenal and seven gastric ulcers. This ratio the author points out is not in accord with other statistics that he has seen, as four or five duodenal ulcers are usually reported for one gastric ulcer. The only explanation

that he can offer for this difference is that patients with gastric ulcer suffer less pain and are able to get relief with alkalis. A definite diagnosis is therefore not made. Probably if barium sulfate meals were given in all the so-called indigestion cases the incidence of ulcer would be much higher than 2.16 per cent and most likely the increase in gastric ulcers would be more marked. In the last eleven years, of the eighty-one patients with ulcers fifty-seven have been treated medically and twenty-four have had an operation. The twenty-four surgical cases include perforations and operations by choice. Nonoperative treatment in the fifty-seven cases gave good results in forty-one, fair in eleven and poor in five. To the author these figures appear satisfactory when it is realized that these patients are laborers who carry lunches, require large quantities of food and almost invariably are heavy users of alcohol and tobacco. The results in the surgical cases have not been as good, only three of the thirteen patients operated on by choice having had adequate medical treatment before operation. In only seven of these have the results been satisfactory. A subsequent gastric resection was performed on one of the six patients, with unsatisfactory results. Four of the remaining five have gastric ulcers, as shown by x-ray examination. Six of the eleven patients operated on because of perforations had never sought medical care and only on careful questioning would admit any previous indigestion. Two others were known to have ulcers, and one of these had had gastro-enterostomy. The remaining three were being treated for indigestion. The only death associated with peptic ulcers occurred in this group and was due to postoperative pneumonia. There are records of only five patients who had a definite hematemesis or melena; this followed gastro-enterostomy.

Delaware State Medical Journal, Wilmington

11: 231-246 (Nov.) 1939

- Stabilization of Joints in Childhood. A. R. Shands Jr., Wilmington.—p. 231.
Vocational Rehabilitation. R. N. Parkhill, Wilmington.—p. 235.

Florida Medical Association Journal, Jacksonville

26: 213-264 (Nov.) 1939

- Eugenic Sterilization. A. T. Cobb, Gainesville.—p. 227.
Management of Injuries from Automobile Accidents. E. B. Hardee, Vero Beach.—p. 231.
Perinephric Abscess, Its Diagnosis and Treatment. J. J. Guerra, Tampa.—p. 233.
Can the Mosquito Transmit Syphilis? W. H. Kupper, Miami Beach.—p. 236.
Bidwell T Frame, Leg Setting Apparatus. A. M. Bidwell, Tampa.—p. 238.

Indiana State Medical Assn. Journal, Indianapolis

32: 675-730 (Dec.) 1939

- Psychologic Factors in Cardiology. E. F. Horine, Louisville, Ky.—p. 675.
Some Contributions of Roentgen Rays to Diagnosis. B. R. Kirklin, Rochester, Minn.—p. 677.
Internal Fixation of Fractures: Analysis of Reaction of Various Metals. W. C. Campbell, Memphis, Tenn.—p. 679.
Bronchoscopy as Aid in Treatment. H. B. Orton, Newark, N. J.—p. 683.
Serum Treatment of Pneumonia. R. Hoffman, South Bend.—p. 686.
Specific Primary Peritonitis. C. Ingalls, Washington, Ind.—p. 688.
Complications Following General Anesthesia. F. A. Thomas, Indianapolis.—p. 695.

Journal of Bacteriology, Baltimore

38: 485-598 (Nov.) 1939. Partial Index

- Experimental Study of Relation Between Concentration of Disinfectants and Time Required for Disinfection. E. W. Tilley, Washington, D. C.—p. 499.
Studies on Hemolytic Streptococcus: III. Polysaccharide and Protein Fractions Encountered in Precipitation of Erythrogenic Toxin from Culture Filtrates. A. H. Stock, Pittsburgh.—p. 511.
*Relationship Between Temperature and Streptococcal Activity of Sulfanilamide and Sulfapyridine in Vitro. H. J. White, Baltimore.—p. 549.
Studies on Immunizing Substances in Pneumococci: X. Relationship Between Acetyl Group on Type I Pneumococcus Polysaccharide and Antigenicity. L. D. Felton and B. Prescott, Washington, D. C.—p. 579.

Effect of Temperature on Streptococcal Action of Sulfanilamide Derivatives.—White presents data on quantitative relationships between sulfanilamide and sulfapyridine and bacteria, in terms of bactericidal action, at temperatures between

86 and 102.2 F. The standard test medium was essentially a 2.1 per cent solution of peptones plus 0.1 per cent dextrose buffered at a pH of approximately 7.6. The minimal bactericidal concentrations of sulfanilamide and of sulfapyridine for each of six different initial concentrations of beta hemolytic streptococcus strain C 203 (a member of the serologic group A, Lancefield) in the peptone-dextrose broth were determined at temperatures between 86 and 102.2 F. Incubation of drug-bacteria mixtures was maintained for forty-eight hours in water baths with thermostat control to ± 0.005 of a degree. Simultaneous titration of the drug and the culture, each against the other, with sterilization as the end point for measuring the activity of the drug, was carried out in a total of 312 determinations. It was found that concentrations of sulfanilamide lower than 1,000 mg. per hundred cubic centimeters of broth medium were inactive at 86 F. and concentrations of sulfanilamide lower than 100 mg. were inactive at 96.8 F. At 102.2 F., concentrations of 10 mg. or less per hundred cubic centimeters of broth medium were bactericidal against an average initial bacterial concentration of 50,000 per cubic centimeter. About a hundred times as much sulfanilamide was required for sterilization at 98.6 as at 102.2 F. Drug concentrations of 10 mg. or less per hundred cubic centimeters of medium were active only at temperatures above 98.6 F. Sulfapyridine was similarly influenced by temperature, but at a higher level of activity. The average activity ratio for these compounds was 4.5, in favor of sulfapyridine. Accurate temperature control appears to be an essential part of any reliable method for measuring the in vitro activity of these drugs.

Journal of Immunology, Baltimore

37: 413-506 (Nov.) 1939

- Behavior of Acid-Treated Antipneumococcus Rabbit Antibodies. A. J. Weil, A. M. Moos and Frances L. Clapp, Pearl River, N. Y.—p. 413.
Reaction of "Tetanus-Sensitive" and "Tetanus-Resistant" Animals to Injection of Tetanus Toxin into Spinal Cord. H. B. Shumacker Jr., A. Lamont and W. M. Firor, Baltimore.—p. 425.
Serologic Differences of Group Character A in Different Parts of Human Organism. V. Friedenreich, G. Thyssen and G. Hartmann, Copenhagen, Denmark.—p. 435.
Chemical and Immunologic Studies of Pneumococcus: V. Soluble Specific Substances of Types I to XXXII. Rachel Brown, Albany, N. Y.—p. 445.
Role of "Autoantigens" in Pathogenesis of Physical Allergy. S. Karady, Montreal.—p. 457.
Effect of Histamine Treatment on Histamine and Anaphylactic Shock in Guinea Pigs. S. Karady and J. S. L. Browne, Montreal.—p. 463.
Studies on Meningococcal Infection: XI. Quantitative Study of Precipitative Reaction Between Type I Polysaccharide and Antimeningococcus Horse Serums. H. W. Scherp, Philadelphia and Rochester, N. Y.—p. 469.
Studies in Active Immunization Against Undulant Fever: I. Antibody Production by Rabbits Immunized with Heat-Killed *Brucella Abortus* Alone and Simultaneously with Heat-Killed *Bacillus Typhosus*. J. A. Kolmer and A. Bondi, with assistance of Mary Howard and Anna M. Rule, Philadelphia.—p. 489.

Journal of Pharmacology & Exper. Therap., Baltimore

67: 257-372 (Nov.) 1939. Partial Index

- Comparative Activity of Deoxycorticosterone and Other Crystalline Derivatives and of Purified Extracts of Adrenal Cortex. A. Grellman, Baltimore.—p. 257.
Depressant Action of Picrotoxin and Metrazol. J. M. Dille and L. W. Hazleton, Seattle.—p. 276.
*Blood Concentration in Morphine Addicts. E. G. Williams, Lexington, Ky.—p. 290.
Effect of Liver Damage on Blood Level and Action of Paraldehyde. H. Levine, A. J. Gilbert and M. Bodansky, Galveston, Texas.—p. 297.
Hypoglycemic Activity of Globin Insulin. L. Reiner, D. S. Seale and E. H. Lang, Tuckahoe, N. Y.—p. 330.
Calcium Ions Necessary to Synaptic Transmission in Parasympathetic, Not in Sympathetic, Ganglions. G. D. Shafer, San Francisco.—p. 341.
Distribution and Rate of Elimination of Picrotoxin. Dorothea M. DeG and J. M. Dille, Seattle.—p. 353.
Retention and Excretion of Selenium After Administration of Sodium Selenite to White Rats. R. A. Gortner Jr. and H. B. Lewis, Ann Arbor, Mich.—p. 358.

Blood Concentration in Morphine Addicts.—Williams studied the effect of maintained addiction to morphine of 136 samples of blood from eighteen well controlled addicts. These data were compared with those on samples from 189 postaddicts living in an institution under well controlled environmental conditions. These data were also compared with those obtained from fifty-five normal male employees of ages comparable with those of the patients. The mean hematocrit value for the group during maintained addiction was 42.73 volumes per cent, for the

postaddict group it was 47.69 and for the normal employees it was 47.7. The mean specific gravity of whole blood of patients during maintained addiction was 1.0473, for the postaddict group it was 1.0526 and for the employees it was 1.0504. The average values for specific gravity of plasma for the three groups were respectively 1.0195, 1.0217 and 1.0213. Although the figures do not differ much from one another there is definite evidence of hydration during addiction. The average value for the water content of whole blood during addiction was 0.8433, in the post-addiction state it was 0.8294 and in the normal group it was 0.8279. The water content of the plasma in the addict group was greater than in either the postaddict or the employee group, the average values being 0.9316, 0.9236 and 0.9276 respectively. The author concludes that in man morphine addiction with strong physical dependence is associated with blood hydration. During withdrawal there is a temporary decrease in hydration, but a true concentration does not occur. Postaddicts have normal values for cell volume, specific gravity of plasma and water content of whole blood.

Military Surgeon, Washington, D. C.

85: 461-564 (Dec.) 1939

- Importance of Adequate Records of Sick and Wounded in Military Services in Time of War, and Best Methods for Obtaining Them. A. G. Love.—p. 461.
Technic for Preparation of Substitute for Whole Blood Adaptable for Use During War Conditions. W. L. Tatum, J. Elliott and N. Nesset.—p. 481.
Stone-Burke Orthotolidine Test for Hematuria. C. C. Gill.—p. 501.
Nutrition as Factor in Periodontal Conditions. D. Mosher.—p. 506.
Treatment of Dementia Praecox by Pharmacologic Shock. E. H. Parsons, A. Simon and Z. Lebensohn.—p. 508.
Varicose Veins: Complications and Results of Treatment of 5,000 Patients. F. L. Smith.—p. 514.
Tropical Diseases from the Standpoint of a Medical Officer of the United States Army. J. C. Carballeira.—p. 522.
Diagnosis of Raynaud's Disease. A. H. Cook.—p. 528.

Nebraska State Medical Journal, Lincoln

24: 441-480 (Dec.) 1939

- Office Treatment of Rectal and Anal Pathology. J. K. Anderson, Minneapolis.—p. 441.
Practical Application of Recent Advances in Our Knowledge of Liver Functions. H. L. Bockus, Philadelphia.—p. 448.
Comparative Epidemiology of Encephalomyelitis and Poliomyelitis. J. H. Murphy, Omaha.—p. 453.
Management of Infections of Bladder. H. W. Shreck, Holdrege.—p. 458.
Treatment of Crushing Injuries of Chest. F. Teal, Lincoln.—p. 463.

Epidemiology of Encephalomyelitis and Poliomyelitis.—Murphy lists the following striking points of similarity between the comparative epidemiology of the equine encephalomyelitis and anterior poliomyelitis: 1. Cases of equine encephalomyelitis (in the area studied) occur on water courses, in depressed areas, not on crests, the economic status (viz. stables, sanitation and supervision were equally good, poor and fair) has an influence, isolated case on an island in the Missouri River, occurrence corroborated in different epidemics, immunity demonstrated and wind influence demonstrated. 2. Cases of anterior poliomyelitis were found to occur on water courses, in depressions and slopes, not on crests, economic status varied equally, isolated case west of city, occurrence corroborated in different years, immunity accepted on previous research and wind influence demonstrated. Assuming these points to be true, including a vector as the mode of transmission, from his analysis it appears to the author that the vector is wind influenced. Such a vector may be one that can be impelled by wind or air currents, such as the mosquito or other agent requiring a definite locale for propagation, can be carried or blown a distance, dislikes highly agitated air and is active in the seasonal occurrences of the disease. Such an agent also can possibly be infected because the virus is in the horse's blood in the early stage of the disease as well as in other demonstrated reservoirs of infection. Surface winds are retarded by friction with the ground and objects thereon to a height of from five to six times the height of such objects. Other elements, viz. barometric pressure and temperatures, also exert some influence. The flow of air can be likened to the flow of water. It is influenced by resisting objects (buildings, hills and the like), cross currents and eddies, and it differs in velocity.

New England Journal of Medicine, Boston

221: 845-882 (Nov. 30) 1939

- Maternal Mortality Study in Massachusetts for 1938. R. S. Titus, Boston.—p. 845.
Rupture of Uterus. F. J. Lynch, Boston.—p. 847.
Obstetric Analgesia and Anesthesia. B. F. Cornwall, Salem, Mass.—p. 850.
Rupture of Liver. C. A. Lamb, Boston.—p. 855.
Traumatic Surgery. H. C. Marble, Boston.—p. 860.

Rupture of Liver.—Lamb reviews sixty cases of rupture of the liver and shows that it is most commonly due to violent injuries but that seemingly trivial injuries may likewise cause laceration. Rupture of the liver is much more frequent in young people than in older ones. This can be accounted for on the basis of violence alone, for the young engage in many more daring activities than do the old. Another reason is that the bony protection in the young is much more supple and that minor blows are therefore more likely to reach the liver. The ratio of male to female patients in this series was 5:1. Every one of the women had sustained injury as a result of an automobile accident. Although the men had been injured in all sorts of accidents, most of their injuries had been produced by automobiles. One child fell while walking the curbing and struck his right lower ribs. Another coasted into a tree. Another was kicked in the side by a horse. A few were injured while playing games, chiefly football. The wheel of some vehicle traversing the abdomen was a common cause of injury. Falling from a height was the etiologic factor in a number of cases. It is absolutely essential to recognize rupture of the liver early in order that proper care may be instituted promptly. Thole states that the mortality increases from 2 to 5 per cent with each hour's delay in treatment. The author's statistics confirm this assertion. An exact diagnosis cannot be made except on exploration, but the need of immediate laparotomy can be shown without great difficulty. Given a patient who has met with a blow to the midtrunk and soon shows signs of shock, together with tenderness in the right upper quadrant, rebound tenderness (blood in the peritoneal cavity) and an elevated white cell count (bleeding in a serous cavity), an exploration is mandatory. The patient should receive whole blood before, during and after the operation in sufficient quantities to keep the blood pressure within the range of safety. He should be treated for his shock on the operating floor and if possible on the operating table, so that movement may be reduced to a minimum. Except for exposure, no type of incision possesses any special advantage. Transverse incision gives a better exposure for barrel-chested patients but is of doubtful advantage for thin patients. Infection after liver injury is common. Drainage of bile occurs in 50 per cent of the cases but ceases in every case by the third week. The commonest postoperative complications are in the order of frequency: peritonitis, postoperative hemorrhage, subdiaphragmatic abscess, intrahepatic abscess, subhepatic abscess and abscess of the lesser peritoneal cavity. In the present series, twenty-six patients died before operation could be performed. Of the thirty-four operated on, fifteen died and nineteen recovered, a mortality rate of 44 per cent. The mortality rate, however, for the entire series of sixty cases was 68 per cent.

New York State Journal of Medicine, New York

39: 2155-2234 (Dec. 1) 1939

- Doctors, Lawyers and Injured Brains. I. J. Sands, Brooklyn.—p. 2161.
Sensitization to Simple Chemicals: V. Comparison Between Reactions to Commercial and to Purified Dyes. R. Hecht, Chicago; L. Schwarzschild and M. B. Sulzberger, New York.—p. 2170.
Communicable Diseases and the School. E. L. Stebbins, Albany, N. Y.—p. 2174.
Obstetric Complications in Relation to the General Practitioner. E. A. Schumann, Philadelphia.—p. 2178.
Measurements of Circulation in Chronic Constrictive Pericarditis Before and After Resection of Pericardium. H. J. Stewart and G. J. Heuer, New York.—p. 2183.
Treatment of Traumatic Wounds with Zinc Peroxide. F. L. Meleney, New York.—p. 2188.
Erythrocyte Sedimentation Test: Observations on Sedimentation Rates and Leukocyte Changes in 103 Hospital Cases. R. O. Gregg and E. G. Allen, Syracuse.—p. 2192.
Histamine in Treatment of Physical (Heat) Allergy and Some Other Conditions: Report of Five Cases. M. Vaisberg, Patchogue, N. Y.—p. 2199.
Relation Between Anemias and Digestive Diseases in Children. I. N. Kugelmass, New York.—p. 2202.
Modern Approach to Early Diagnosis of Pulmonary Tuberculosis. J. A. Miller, New York.—p. 2208.

Public Health Reports, Washington, D. C.

54: 2077-2120 (Nov. 24) 1939

Factors Influencing Carcinogenesis with Methylcholanthrene: II. Lack of Effect of Foster Nursing. M. B. Shimkin and H. B. Andervont.—p. 2080.

Studies on Some Possible Causative Factors of Spontaneous Adenomatous Lesion of Stomach in Mice of Strain I. H. B. Andervont.—p. 2085.

Studies in Chemotherapy: XI. Antibacterial Action of Phosphorus Compounds: Preliminary Report. H. Bauer and S. M. Rosenthal.—p. 2093.

54: 2121-2158 (Dec. 1) 1939

*Riboflavin Deficiency in Man (Ariboflavinosis). W. H. Sebrell and R. E. Butler.—p. 2121.

Human Serum as Stabilizer of Scarlet Fever *Streptococcus* Toxin Diluted for Dick Test. M. V. Veldee.—p. 2131.

Cerebral Pathology in Rodents in Endemic Typhus and Rocky Mountain Spotted Fevers. R. D. Lillie, R. E. Dyer and N. H. Topping.—p. 2137.

Riboflavin Deficiency in Man.—Sebrell and Butler examined carefully eighteen adult white women living in an institution and found them to be in good general condition except for mental disorders and physical defects of a nature which would not interfere with their studies. There were no interfering cutaneous, labial or buccal lesions. Thirteen of these women, after receiving a special diet low in riboflavin content, had a reddened, denuded lesion of the lips, maceration and fissuring in the angles of the mouth and seborrheic accumulations at the nasolabial folds developed between the ninety-fourth and the one hundred and thirtieth day on the deficient diet. These lesions disappeared following the daily administration of synthetic riboflavin; they reappeared following the discontinuance of the riboflavin and again disappeared when riboflavin was again given. Six of these women were treated for varying lengths of time with nicotinic acid without benefit. Four of the remaining five women were given a daily preventive dose of synthetic riboflavin after taking the deficient diet for 139 days and they showed no lesions of any kind during the 365 days of observation. The one woman who did not receive any riboflavin therapy showed no lesions at any time during the 365 days of observation. It seems apparent that these lesions are a manifestation of riboflavin deficiency.

Radiology, Syracuse, N. Y.

33: 551-680 (Nov.) 1939

Displacement of Choroidal Plexuses as Aid in Diagnosis and Localization of Brain Tumor. W. W. Fray, Rochester, N. Y.—p. 551.

Analysis of Laminographic Motions and Their Values. J. Kieffer, Norwich, Conn.—p. 560.

Sectional Roentgenography of Larynx. W. E. Howes, Brooklyn.—p. 586.

Exploration of Thorax by Body Section Roentgenography. H. M. Wilson, New Haven, Conn.—p. 598.

Body Section Radiography. S. Moore, St. Louis.—p. 605.

Suggestions for Improvement of Illustrations. A. Ter Louw, Rochester, N. Y.; F. R. Lear, Easton, Pa., and L. J. Menville, New Orleans.—p. 615.

Pulmonary Cysts. A. R. Shirley, Wood (Milwaukee), Wis.—p. 623.

Intestinal Obstruction. N. S. Zeitlin, Chicago.—p. 628.

*Relation of Tissue Recovery and Healing Process to Periodicity of Radiation Effects. M. Friedman, New York.—p. 633.

Barium Rubber Drains: Surgical Drainage Tubes That Are Visible by X-Ray. G. M. Wyatt, Boston.—p. 644.

Tissue Recovery, Healing and Periodicity of Irradiation.—Friedman divides the phenomena resulting from protracted fractionated irradiation into two phases: the destructive phase and the healing phase. Each phase has specific characteristics and is modified to varying degrees by the quality of the radiation, the size of the daily dose, individual susceptibility, the daily exposure time and the continuity of the treatment. The fluctuating prowess of the healing process determines whether destructive or healing phenomena dominate the clinical picture. It is this cyclic alternation of the destructive phase with the healing phase that can be termed periodicity. The extent to which the character of the skin and mucosal reactions are reflected in the tumor probably depends on the latter's degree of differentiation and consequently its morphologic and physiologic resemblance to the parent tissue. During the healing phase, residual tumor cells have usually been matured by irradiation and have adapted themselves to its effects. Therefore it is recommended that during a prolonged course of irradiation no treatment be given during the healing phase.

South Carolina Medical Assn. Journal, Greenville

35: 297-324 (Dec.) 1939

Aphorisms on Tuberculosis. W. A. Smith, Charleston.—p. 297.

Painful Scars. F. E. Kredel, Charleston.—p. 299.

Pulmonary Complications as Aid in Diagnosis of Subphrenic Abscess: Preliminary Report. J. A. Boone, Charleston.—p. 300.

Evolution of Knowledge of Tumors. K. M. Lynch, Charleston.—p. 301.

A Century and a Half of Progress in Surgery. R. S. Cathcart, Charleston.—p. 304.

Brief Historical Retrospect. R. Wilson, Charleston.—p. 308.

Southwestern Medicine, El Paso, Texas

23: 353-390 (Nov.) 1939

Wound Healing. T. G. Orr, Kansas City, Kan.—p. 353.

Suspicious Cancer Symptoms. E. P. Palmer, Phoenix, Ariz.—p. 356.

Early Changes in Endometrium: Diagnosis and Management. B. H. Orndoff, Chicago.—p. 359.

Surgical Manifestations of Amebiasis. R. W. Mendelson, Albuquerque, N. M.—p. 361.

Traumatic Rupture of Diaphragm with Bilateral Pneumothorax. R. W. Bliss, El Paso, Texas, and M. M. Green, Panama, Canal Zone.—p. 366.

Mental Anorexia Simulating Pituitary Cachexia. J. W. Myers, Albuquerque, N. M.—p. 367.

Closed Pneumolysis in Pulmonary Tuberculosis: Case Report. J. R. Phillips, Houston, Texas, and L. F. Knoepp, Beaumont, Texas.—p. 369.

Surgery, Gynecology and Obstetrics, Chicago

69: 705-838 (Dec.) 1939. Partial Index

Etiologic Factors in Varicose Veins of Lower Extremities. J. C. Adams, Portland, Ore.—p. 717.

Study of Pathologically Verified Epidermoid Carcinoma of Skin. S. Warren and S. O. Hoerr, Boston.—p. 726.

*Significance of Cevitamic Acid Deficiency in Surgical Patients. J. A. Wolfer and F. C. Hoebel, Chicago.—p. 745.

*Sweating Function of Transplanted Skin. H. Conway, New York.—p. 756.

Acetylcholine as Diagnostic Test in Cases of Congenital Megacolon. G. de Takats, Chicago.—p. 762.

Technic of Gastric Resection for Gastroduodenal Ulcer. R. Alessandri, Rome, Italy.—p. 765.

Fractures of Clavicle: Ambulatory Treatment by Suspension Elevation. R. Anderson, Seattle.—p. 770.

Calibrated Intermediate Skin Grafts. E. C. Padgett, Kansas City, Mo.—p. 779.

*Method for Prevention of Elephantiasis Chirurgica. E. H. Hutchins, Baltimore.—p. 795.

Extrapleural Pneumothorax. A. J. Hruby, R. Davison and G. Schneider, Chicago.—p. 804.

Improved Incision for Radical Operation for Carcinoma of Breast. N. J. Maclean, Winnipeg, Man.—p. 816.

Malignant Mixed Tumors: Adenosarcoma of Corpus Uteri. L. Sophian, New York.—p. 818.

Ascorbic Acid Deficiency and Surgery.—According to Wolfer and Hoebel, although there is no absolute proof at present of the relation of vitamin C deficiency to nonhealing of wounds in human beings there is considerable historical, pathologic, experimental and clinical evidence to support the theory that a relationship exists and to encourage further study, particularly in the clinical field. If the level of ascorbic acid in the blood is low and this is accompanied by a history of deficient or defective alimentation of foods containing the vitamin, it may be considered that the tissues also are depleted. Patients known to be deficient in vitamin C may be saturated by large doses of synthetic ascorbic acid administered either by mouth or intravenously, or by adequate feedings of foods rich in vitamin C. The patient cannot be considered to be saturated with the vitamin until the blood level has been maintained at optimal or above for some time. This should be verified by a high urinary excretion of the vitamin. The latter can be determined only when the daily intake of vitamin C is known. When such determinations are not available the patient should be given 1 Gm. of ascorbic acid daily for a period of nine or ten days and then maintained on doses of from 300 to 500 mg. of the acid daily until the wound is healed. The patient may then be kept saturated on an adequate diet including foods containing vitamin C. The excretion of the vitamin by way of the feces is negligible except in the presence of hypermotility of the small intestine or in addicts to alcohol. Vitamin C deficiency should be thought of and determinations made of (1) patients with a deficient diet—voluntary, because of low income or because of a physician's dietary orders, (2) those taking large doses of alkalis by mouth, (3) those with obstructive gastrointestinal lesions, particularly at the pylorus or above, (4) those with a history of vomiting.

over long periods, (5) those with hypermotility of the small intestine and (6) syphilitic patients and addicts to alcohol. After operation normal patients may show a drop of vitamin C to scurvy levels because of long periods of intravenous therapy, abnormal intestinal function and an increased utilization of vitamin C that apparently accompanies infections and operative procedures.

Sweating Function of Transplanted Skin.—Conway studied the sweating function of seventy-five transplanted grafts. Whole thickness grafts and pedunculated flaps were found to be capable of sweating, while small, deep, Ollier-Thiersch and thick split grafts did not have the function of sweating. The age of the individual apparently was not an influencing factor. The reestablishment of the sweating function of the skin depends certainly on the presence of sudoriparous glands in the transplant. This study gives no information on the question as to whether or not the sympathetic nerve fibers to the grafts of skin must be reestablished before the sweating function can take place.

Prevention of Surgical Elephantiasis.—Hutchins offers a method for preventing surgical elephantiasis, especially that following radical excision of the breast to cure cancer. The operation attempts, at the time of the operation, reestablishment of the axilla by the plastic method to a degree or point as near the original as possible. It also endeavors to construct an artificial breast out of the abdominal fat at the time of operation and thus help to avoid the psychosis following operation. In order to reconstruct the axilla more completely it may be advisable to detach the latissimus dorsi not only at its origin but also at its insertion and to reinsert it in the coracoid process. This would provide a framework for the axilla resembling in many respects the part played by the pectoral minor muscle. While the mortality from cancer of the breast is constantly improving, the morbidity of the patient because of the loss of a breast is a constant menace and should have the most serious attention of every surgeon operating for that condition.

Tennessee State Medical Assn. Journal, Nashville

32: 379-416 (Nov.) 1939

- Postgraduate Medical Education. M. E. Lapham, New Orleans.—p. 379.
Recurrent Abscess of Thyroid Gland: Case Report. C. H. Long, Johnson City.—p. 383.
Auscultation in Diagnosis of Surgical Diseases of Abdomen. B. McSwain, Paris.—p. 384.
Carcinoma of Stomach: Analytic Study. W. E. Bryan, Chattanooga.—p. 390.
Endemic Goiter. L. K. Gibson, Johnson City.—p. 394.

Virginia Medical Monthly, Richmond

66: 641-706 (Nov.) 1939

- Changing Era in Medical Economics. A. F. Robertson Jr., Staunton.—p. 641.
Commentary Concerning Psychoanalysis. L. F. Woolley, Towson, Md.—p. 644.
Is Virginia Doing Its Duty Toward the Advanced Case of Tuberculosis? C. L. Harrell, Norfolk.—p. 650.
Kielland Forceps. M. P. Rucker, Richmond.—p. 653.
Sciatic Neuritis and Low Back Pain Caused by Rupture of Intervertebral Disks. M. K. King, Norfolk.—p. 656.
Arsenical Exfoliative Dermatitis with Tobacco Being Probable Source of Etiologic Agent: Preliminary Report. E. E. Barksdale, Danville.—p. 660.
Cancer of Rectum. W. L. Sibley, Roanoke.—p. 663.
Development of Helpful Mental Habits in Early Childhood. O. B. Darden, Richmond.—p. 666.
What Message Should the Specialist Carry to the Family Physician in Regard to Treatment of Arthritis? T. Wheelodon, Richmond.—p. 670.
Trachea and Medical Inspection of Aliens. T. C. Merrill, Paris, France.—p. 674.

West Virginia Medical Journal, Charleston

35: 543-594 (Dec.) 1939

- Character and Significance of Heart Pain (Oration on Medicine). R. O. Rogers, Bluefield.—p. 543.
Recent Advances in Diagnosis and Management of Placenta Praevia. T. L. Montgomery, Philadelphia.—p. 548.
Treatment of Three Surgical Conditions of Large Bowel. J. E. Cannaday, Charleston.—p. 556.
Use of Continuous Suction in Surgical Treatment. C. B. Wright, Huntington.—p. 564.
Traumatic Rupture of Spleen. T. L. Harris, Parkersburg.—p. 569.
Hemolytic Streptococcus Septicemia Complicating Type IV Pneumococcus Lobar Pneumonia: Case. O. G. King, Bluefield.—p. 575.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

14: 89-180 (June) 1939

- Biliary Cirrhosis. P. R. Evans.—p. 89.
Association of Gallstones with Acholuric Jaundice in Children: Report of Case in a Child Aged 3 Years with Note on Crises of Acholuric Jaundice. D. Gairdner.—p. 109.
*After-History of Premature Infants, with Special Reference to Effect of Birth Weight on Weight Chart. R. S. Illingworth.—p. 121.
Ultimate Prognosis of Nephritis in Childhood, Together with a Study of Incidence of Anemia in Various Stages of Disease. Jean M. Cass.—p. 137.
Absorption Studies in Children with Giardia Lamblia Infection: Preliminary Report. P. V. Véghelyi.—p. 155.
Blood and Spinal Fluid Sugar and Chloride Content in Meningitis. Esther Hendry.—p. 159.
Eumydrine in Pyloric Stenosis. H. St. H. Vertue.—p. 173.

After-History of Premature Infants.—Illingworth compares the records of 150 consecutive children (premature series) who at birth weighed $5\frac{1}{2}$ pounds (2,545 Gm.) or less, irrespective of the duration of gestation, with that of a control series of 150 consecutive children who at birth weighed $8\frac{1}{2}$ pounds (3,905 Gm.) or more. The children had a wide variety of ailments and irrespective of the ailment all were included in the two series. All were attending the outpatient department of the Hospital for Sick Children for medical conditions. At the time that this study was begun all the children were more than 1 year of age. It was found that, according to Holt's standard, 86 per cent of the premature series at the various ages of childhood are underweight whereas only 34 per cent of the control series are underweight. Of the premature series $21\frac{1}{2}$ per cent are more than 10 pounds (4.5 Kg.) underweight as compared with $1\frac{1}{2}$ per cent of the control group. Of the premature series 0.66 per cent are 5 pounds (2.3 Kg.) overweight and none more than 5 pounds overweight. Of the control series 24 per cent are more than 5 pounds above the average weight for their age. Prematurity at birth is presented as a common cause of dwarfism in children. The duration of breast feeding appeared to have some effect on the ultimate weight of the child, children breast fed for more than six months appearing to weigh more later than those breast fed for less than two months. There was no difference in the incidence of infectious diseases in the two groups. There was a high incidence of spasticity and other cerebral defects in the premature group. The records show that the premature or small baby is less likely to be an allergic subject than the baby large at birth, as 54 per cent of children with infantile eczema weighed more than 8 pounds (3,630 Gm.) at birth compared with 20 per cent of the control series of children. It is suggested that the weight of the preschool and the school child may also depend on factors quite remote from the birth weight; for example the financial status of the mother, the diet she takes in pregnancy, her occupation, hereditary factors and pathologic conditions of the mother.

Sang, Paris

13: 817-936 (No. 8) 1939. Partial Index

- Optic Method for Study of Blood Coagulation: Technic and Results. C. Lian, P. Frumusan and Sasser.—p. 817.
Sternberg's Cells and Megacaryocytes. G. Pittaluga.—p. 833.
*Epidermoid Cysts of Spleen. P. Lereboullet, R. Grégoire, J. Bernard and R. Ibarran.—p. 853.
Pseudoleukoerythrosis in Edematous Conditions. A. Kobryner and D. Rosenkranc.—p. 870.
Total Telereontgen Therapy in Treatment of Hodgkin's Disease. G. Marchal, L. Mallet and H. le Loc'h.—p. 897.
Role of Copper in Anemias of Childhood Caused by Iron Deficiency. J. H. Hutchinson.—p. 908.
New Method of Differential Diagnosis of Leukemias and of Leukemoid Reactions. N. Gingold.—p. 920.

Epidermoid Cysts of Spleen.—Lereboullet and his associates give a detailed history of a boy aged 8 who was referred to them because a tumor had been discovered in the left hypochondrium. X-ray and other observations confirmed the splenic origin of the tumor, and the regular contour suggested that it was cystic. The boy was free from functional disturbances but the tumor seemed to increase and an operation was performed. The incision into the left hypochondrium disclosed a voluminous

cyst of the spleen, which involved particularly the gastric surface of the organ. Exteriorization was rendered difficult by the shortness of the pedicle. Splenectomy was done and the post-operative course was normal. The extirpated spleen weighed 850 Gm. It was extremely deformed by the cyst, which on opening proved unilocular and almost spherical, with a diameter of 8 cm. It contained about 300 cc. of a clear pale yellow liquid. The authors made microscopic studies on the splenic tissue and on the cystic wall. The epithelial lining permitted a definite diagnosis, for it exhibited the epidermoid aspects. The authors think that the epidermoid cyst represents a special variety of splenic cyst. They stress that the typical histologic formation may be present only in a restricted area and that it is essential that sections be taken from various points of the cystic wall. Furthermore, only special stains (Weigert and Del Rio Hortega) will bring the epidermoid character into evidence. The etiology of epidermoid cysts is still obscure, but their predilection for young persons and children seems to suggest a congenital origin. Splenectomy is the treatment of choice in these cysts. The patient was in excellent health a year after the operation.

Cardiologia, Basel

3: 301-364 (No. 5) 1939

Paroxysmal Ventricular Tachycardia with Morgagni-Adams-Stokes Syndrome and Preautomatic Pause of Sinus Node. F. M. Groedel and B. Kisch.—p. 301.

*Experimental Investigations on Air Embolism. I. Pines.—p. 308.

Systematic Investigations on Thoracic Leads in Left and Right Types of Electrocardiogram. J. Freundlich and E. Lepeschkin.—p. 331.

"Perspiratio Insensibilis Negativa" as Cause of Paradox Behavior of Body Weight in Patients with Heart Disease and in Obese Persons. O. Neurath.—p. 353.

Experimental Investigations on Air Embolism.—Pines injected air into the jugular vein or into the left auricle of dogs and cats. He found that in case of massive venous air embolism blood foam is formed which passes from the right ventricle into the pulmonary artery and its branches. When the pulmonary circulation is completely blocked, the aortic pressure drops to zero and death ensues from asphyxiation. If, however, the pulmonary circulation is incompletely obstructed, the decrease in aortic pressure disappears and compensatory reactions set in which relieve the heart. Such compensatory mechanisms are the passage of air into the left ventricle and the peripheral circulation, the absorption of air by the blood and the elimination of air into the alveoli. As can be demonstrated in postmortem examinations, large quantities of air may disappear from the blood. Functional disturbances produced by air embolism pass off quickly. The passage of air into the left ventricle may have serious effects because of embolism of the coronary vessels. This, however, occurs rarely. Twice as much air as corresponds to the beat volume was injected into the left ventricle without killing the animals, although coronary arteries were found embolized. Different species of animals apparently react differently; for instance, fibrillation occurs more frequently in dogs. The author says that it cannot be doubted that, following the rapid injection of large quantities of air into a vein, death results from blockage of the pulmonary circulation. If the objection is made that death under these conditions is not a cardiac death but is the result of cerebral anemia and respiratory arrest, this can be accepted only so far as the pulmonary blockage reduces the aortic pressure to zero and that this in turn is followed by cerebral anemia. However, the essential cause of death is nevertheless the fact that the heart is incapable of pressing the blood foam through the lungs. Only if, in case of embolism with small quantities of air, some of it reaches the left side of the heart and from there vital centers, for instance the respiratory center, could a primary respiratory arrest be assumed. This may happen occasionally, but since in the experiments the animals were under artificial respiration, asphyxiation can be excluded. The behavior of the cardiac frequency and of the blood pressure indicates that, by the injection of air into the heart, reflexes are elicited which in case of injection into the right side of the heart originate in the arterial and in case of injection into the left side of the heart originate in the venous portion of the pulmonary circulation or in the carotid sinus.

Bollettino d'Oculistica, Florence

18: 689-768 (Sept.) 1939. Partial Index

*Behavior of Arterial Pressure During Operations on Eyes: Utility of Bleeding. M. Focosi.—p. 689.
Rare Constitutional Sympathetic Disturbances Predisposing to Thrombosis of Central Retinal Vein. G. Basile.—p. 743.

Arterial Pressure During Operations on Eyes.—Focosi followed the behavior of the arterial blood pressure during operations on cataract or glaucoma in a group of 218 patients. He found that arterial pressure increases in all cases during operation (from 15 to 35 mg. of mercury, and in rare cases to 65 mg.). The increase is more acute in old than in young patients. The highest figures of blood pressure show by the end of the operation, especially if the latter is prolonged. In rare cases which are complicated by hemorrhage with elimination of the eye or elimination of the vitreous, the complication takes place when the arterial pressure is at its highest figures. An increase of the blood pressure during or after the operation does not take place in patients subjected to bleeding before the operation, or else the variations of the pressure are moderate. The best results from bleeding are obtained when the procedure is carried on twelve hours before performance of the operation and 400 or 500 cc. of blood is withdrawn. Bleeding induces a moderate transient lowering of the arterial blood pressure, with lowest figures in about twelve hours after its performance. Its main action consists in preventing the increase of arterial blood pressure which follows the operation and which is the pathogenic factor of primal importance for the development of postoperative hemorrhage with expulsion of the eye, elimination of the vitreous and detachment of the choroids, which may complicate operations on cataract or glaucoma. The author advises bleeding before the operation in all cases of hypertension, especially above 170 mg. of mercury, and when the intra-ocular pressure is probably high, as in glaucoma. That type of patient frequently reacts to the operation with hypertension. In either case bleeding is harmless unless there are contraindications, such as heart disease.

Rivista di Neurologia, Naples

12: 317-388 (Oct.) 1939. Partial Index

Epilepsy and Reflex Aphasia from Pulmonary Abscess. F. Vizioli.—p. 317.

*Intraspinal Insufflations of Air in Meningococcic Cerebrospinal Meningitis. G. Murano.—p. 336.

Intraspinal Insufflations of Air in Meningococcic Meningitis.—In a previous article (*Pediatrics* 47:105 [Feb.] 1939) Murano reported the satisfactory results from the administration of intraspinal insufflations of sterile air (pneumo-encephalus) in association with antimeningococcus serum in the treatment of meningococcic cerebrospinal meningitis. In the first group of five infants who were suffering from acute and subacute forms of the disease there were four recoveries. The only failure was due to the presence of complete ventricular blockage when the treatment started. The treatment consists in administration of intralumbar injections of sterile air in doses varying from 15 to 25 cc. immediately followed by an intralumbar injection of antimeningococcus serum in doses varying from 8 to 20 cc. and an intramuscular injection of the same serum in doses of from 15 to 20 cc. The treatment is repeated every other day until three or four treatments are given. In this article the author reports satisfactory results from the treatment in seven cases in infants suffering from acute and subacute forms of the disease. All patients recovered. The author carried on x-ray examinations of the brain and found that the insufflations of sterile air keep the communications open between the ventricles and between the ventricles and the subarachnoid spaces and may break up the blockage of the ventricles and stimulate better conditions of circulation of the cerebrospinal fluid and elimination of the purulent fluid. By collateral researches on patients with normal meninges and those suffering from the disease the author found that the insufflations of sterile air increase the permeability of the barrier between the blood and the meninges from the treatment results in the passage of either antibodies or drugs from the blood to the cerebrospinal fluid in the course of the treatment with either meningococcic serum or with certain drugs.

such as sulfanilamide, which is valuable in the treatment of the condition. Administration of intraspinal insufflations of air is a harmless and well tolerated procedure. Neither early nor late complications were observed in the groups of patients seen by the author. They recovered without sequels.

Beiträge zur Klinik der Tuberkulose, Berlin

93: 549-699 (Oct. 21) 1939. Partial Index

Effects of Infectious Diseases on Tuberculosis of Infants and Pre-School Children. P. Zoelch.—p. 549.

*Icterus Simplex and Pulmonary Tuberculosis. H. Trautwein.—p. 594.
Pericavernous Atelectases and Their Significance for Suction Drainage of Cavities. J. Argemi and R. W. Müller.—p. 615.

Calcium and Tuberculosis. E. Wegemer.—p. 653.

Icterus Simplex and Pulmonary Tuberculosis.—Trautwein reports two cases of bilateral pulmonary tuberculosis temporarily aggravated by hepatitis. The first patient, aged 38, affected with hyperthyreosis, was steadily improving under artificial pneumothorax treatment when, about three and one half months after clinical observation had begun, icterus set in. The liver and spleen became somewhat enlarged and sensitive to the touch. Hepatic disorder was indicated by acholic feces, abundant bilirubin, brown discoloration of the urine and a rise in temperature. In spite of therapeutic measures taken for its control, it took some three weeks for the icterus to disappear. X-ray examinations taken after the evolution of the icterus showed an increased infiltration. The patient was reported to have gradually recovered. The second patient, aged 34, was progressively recovering when four months later a light but increasing attack of icterus occurred. Hepatic and splenic symptoms as well as external indications were noted similar to those in the first case. Similar medication was employed. In two and one half weeks the icterus passed away. Roentgenograms taken and repeated a month after its appearance disclosed activated infiltration in the second intercostal space. Artificial pneumothorax was resorted to. The patient finally was released as able to work. According to the author, the symptoms of the intercurrent disease were those of simple jaundice. The exacerbation of the tuberculous condition is ascribed by him to the damage done to the reticulo-endothelial cells of the liver, which, together with the spleen and bone marrow, conducts the chief defense against infections and intoxications. He regards attention to the proper functioning of the liver as highly significant in the treatment of pulmonary tuberculosis and points out the need of hepatic stabilization by means of vitamin C or other medication. Hepatitis such as icterus simplex in the course of pulmonary tuberculosis, he says, requires energetic management and makes careful observations of the tuberculosis mandatory.

Geburtshilfe und Frauenheilkunde, Leipzig

1: 629-676 (Oct.) 1939

Water Economy During Pregnancy. H. Albers.—p. 629.

Thyroid and Genital Function. F. Siegart.—p. 642.

*Therapeutic Application of Estrogen in Case of Prolonged Pregnancy and Primary Weakness of Labor Pains. R. K. Kepp.—p. 650.

Use of Stilbestrols for Inducing Delivery. K. Rosenkrans.—p. 659.

Deformities of Ventral Line of Closure: Umbilical Hernia and Gastro-schisis. T. Pütz.—p. 663.

Eclampsia and the Newborn. H. Strauch.—p. 671.

Estrogen in Prolonged Pregnancy.—Kepp directs attention to the use of estrogen in cases of prolonged pregnancy. He says that it has not been explained as yet whether estrogen alone will elicit labor. He regards it as most probable that this substance prepares the uterine musculature for the action of the principle of the posterior lobe of the pituitary. At the women's clinic in Göttingen, estrogen has been used for more than a year in the induction of labor in cases of prolonged pregnancy and in cases of primary weakness of labor pains. The combined administration of quinine and solution of posterior pituitary having proved effective in about 50 per cent of such cases, it was decided not to dispense with this form of treatment. In the cases in which metrazol-quinine and solution of posterior pituitary had both been given four times (alternately at thirty minute intervals) without producing the desired effect, the same medication was repeated several days later and at this time it was supported with estrogen in doses of from 50,000 to 200,000 international benzoate units. The author describes the results obtained with this procedure in fifty-six probable, but not definitely demonstrated, cases of prolonged pregnancy. He gained

the impression that there are cases of prolonged pregnancy in which estrogen can be used with success but that it is not effective in all cases and that it is impossible to foretell in which cases it will be helpful. In cases of primary weakness of labor pains, that is, when uterine contractions exist but are too weak or not frequent enough, estrogen seems to be more effective than it is in the induction of labor. In fifteen of eighteen cases in which labor pains were weak, the administration of from 50,000 to 100,000 international benzoate units was followed, after about thirty minutes, by a noticeable improvement in the uterine contractions. Furthermore, the uterus, which previously had been almost refractory to quinine and solution of posterior pituitary, now responded to these remedies.

Klinische Monatsbl. f. Augenheilkunde, Stuttgart

103: 353-560 (Oct.-Nov.) 1939. Partial Index

Brachydaecyilia and Congenital Spherical Lens as Systemic Disease. O. Marchesani.—p. 392.

*Pupil and Diencephalon. W. R. Hess.—p. 407.

Opacity in Shape of Aureole or Physiologic Manifestation on Anterior Surface of Lens. M. Bücklers.—p. 413.

*Episcleritis and Scleritis with Special Consideration of Episcleritis Periodica Fugax. R. Seefelder.—p. 417.

Hematogenic Metastases in Both Eyes in Mammary Carcinoma. H. R. Schinz.—p. 425.

Circumscribed Atrophy of Sclera in Aged Persons. W. Kyrieleis.—p. 441.

Eye Symptoms in Patients with Hypophysial Tumors. P. Karbacher and H. R. Schinz.—p. 541.

Pupil and Diencephalon.—Hess employed electrical stimulation and exclusion of diencephalic areas in his studies on the effect of the diencephalon on the pupillomotor reactions. The experiments, which were made on cats, revealed that the diencephalon influences the width of the pupils. Stimulation of the diencephalic regions elicits the miotic as well as the mydriatic mechanisms. The pupillomotor effects that are elicited by way of the diencephalon are characterized by bilaterality, even if the diencephalic stimulation was unilateral. Another peculiarity of diencephalic influences on pupillomotor reactions is their coupling with other symptoms. Dilatation of the pupils is always accompanied by symptoms of excitation, whereas pupillary contraction concurs with signs of diminished activity. On differentiating electrical examination, the diencephalic action spheres, in the hypothalamus as well as in the thalamus, are separated into an anterior field, which exerts a contracting effect, and a posterior and partly laterally located field, which exerts a dilating effect. Evaluating the clinical significance of these observations, the author stresses that, when central disturbances are suspected, the width of the pupils must be controlled with regard to absolute or standard illumination; that is, it has to be determined whether under standard illumination the pupil is too wide or too narrow. Furthermore, it is necessary to watch for accompanying symptoms. It must be remembered that unilateral focal symptoms cause bilateral pupillary changes when their cause is in the posterior hypothalamus, bilateral but dissimilar pupillary changes when their cause is in the lateral hypothalamus. In connection with the question whether experimental observations on cats permit conclusions regarding conditions in human subjects, the author states that the relatively primitive regulatory mechanisms controlled by the sympathetic nervous system have considerable uniformity throughout the entire scale of vertebrates. Nevertheless, the final decision must be based on clinical observations.

Episcleritis Periodica Fugax.—Seefelder had the opportunity to observe a patient with episcleritis periodica fugax for more than three years. Quinine and cinchophen had been tried earlier without noticeable effect. Internistic, otolaryngologic and dental examination disclosed only a paradentosis, which was subjected to energetic treatment. After this the attacks of episcleritis periodica fugax became for a time somewhat less frequent but then they recurred again with undiminished frequency and intensity. Dietetic and balneologic treatments were without noticeable influence. In order to reduce the painfulness of the individual attack, cocaine, epinephrine, ephedrine and so on were given. The author points out that some investigators have designated episcleritis periodica fugax as an allergic disorder. In this connection he points out that in the reported case the episcleritis was especially severe in the course of a Bartholinitis and he thinks that the toxins circulating in the blood during

the Bartholinitis played an important part. During an attack of influenza, the episcleritis was likewise especially severe. He deduces from this an abnormal reactivity of the episcleral tissue, which responds to all types of irritation with inflammation. In order to reduce this intensified reactivity, the author decided to resort to desensitization, the more so since desensitizing treatment had been recommended before. Every second day the patient was given an intravenous injection of sodium thiosulfate and an intradermal injection of peptone. After fifteen injections of thiosulfate and sixteen injections of peptone, the attacks of episcleritis became less frequent and milder. Later the patient was given ten injections of torantil (a protein preparation) and after that five intramuscular injections of detoxin (a peptone). The latter injections were discontinued at the patient's request. Since the attacks of episcleritis still recurred, intramuscular injections of calcium were tried. In the course of this treatment the attacks of episcleritis ceased for a period of six months and the author thinks that this improvement is not mere accident. He reports another case in which attacks of episcleritis became less frequent and less severe following twenty intravenous injections of sodium thiosulfate and twenty intradermal injections of peptone. In still another case he resorted at once to injections of calcium. Finally he reports a case of severe intra-ocular inflammation which had been diagnosed as iritis and episcleritis. In this case enucleation had to be resorted to and a microscopic examination became possible. The changes discovered in the course of the microscopic studies indicate tuberculosis, and so this case seems to corroborate Oberhoff's contention that tuberculosis plays an important part in the etiology of scleritis.

Zeitschrift f. Geburtshilfe u. Gynäkologie, Stuttgart

119: 253-384 (Oct. 10) 1939. Partial Index

- Results of Treatment of Women with Primary and Secondary Sterility. A. Meier.—p. 253.
Occurrence and Characteristics of Lactation Hormone of Hypophysis. F. Lessmann.—p. 271.
*Interruption of Pregnancy by Male Gonadal Hormone. A. Binder.—p. 285.
Experiments with Synthetic Estrogenic Substance. C. Fáyol.—p. 294.
Results of Treatment of Placenta Praevia at Women's Clinic in Giessen, Demonstrated on cases Treated Between 1915 and 1937. H. Bergk.—p. 304.
Has Prognosis of Eclampsia Changed? H. Ruhl.—p. 328.
Torsion of Pedicle of Ovarian Tumors in Children. J. W. Miller.—p. 336.

Interruption of Pregnancy by Male Gonadal Hormone.

—Binder maintains that the preservation of pregnancy is subject to hormonal laws and that a disturbance within this hormonal correlation threatens or completely interrupts pregnancy. The question arises whether, by causing a deviation within this hormonal equilibrium of pregnancy, it is possible to terminate gestation prematurely. Since experiments with female gonadal hormones resulted in failure or produced results that were not convincing, it was decided to try male hormones. Experiments with testicular extracts on pregnant rabbits, carried out by Neumann and Hofmeister, did not produce uniform results and so the authors made additional experiments on pregnant rabbits. They used a male hormone preparation in which sesame oil served as the solvent. The first group of animals was given intramuscular injections of the hormone preparation for five days, beginning with the thirteenth day of gestation. The second group of animals was given hormone injections for four days, beginning with the twenty-first day. The third group received hormone injections from the eighteenth day of gestation. A fourth group, which served as a control, was given injections with the solvent, beginning with the thirteenth day of pregnancy. These control animals produced viable young. This proves that the abortions at various stages of pregnancy in the animals which were subjected to hormonal treatment was brought about by the male sex hormone. Regarding the practical significance of their observation on the possibility of producing abortion in animals by the administration of male hormones, the authors say that they do not advise the application of this method to human subjects. They reject even the experimental use in human subjects, chiefly because the biology and the behavior of the male hormone in the intermediate metabolism is not sufficiently understood as yet and harmful effects cannot be completely excluded. However, they hope that further animal experiments will throw more light on this problem and that hormonal interruption of pregnancy may become clinically appli-

cable. They also describe microscopic studies on the excretory organs of their test animals. The greatest changes were observed on the ovaries, and on the basis of these changes they assume that the male hormone preparation which they used for their experiments on pregnant animals has its point of attack in the ovary.

Zeitschrift für Immunitätsforschung, Jena

96: 361-522 (Oct. 2) 1939. Partial Index

- Immunobiologic Foundations of Cadham's Rabbit Serum Therapy in Streptococcal and Staphylococcal Sepsis. H. Yü-Djin.—p. 361.
Transmission of Leptospirosis to Mice. H. Hiroki.—p. 396.
Fate of Capsular Substance (P Substance) of Anthrax Bacillus in Organism. G. Ivánovics.—p. 408.
*Serologic Investigations on the Spirochete of Field Fever ("Spirochaeta Grippotyphosa"). B. Karakašević.—p. 427.
Influence of Metals on Toxin Formation of Diphtheria Bacteria. H. O. Hetteche and M. Becker.—p. 440.
Leptospirosis in Workers of Rice Fields of Upper Italy. P. Mino.—p. 466.
Experiments on Protective Inoculation Against Tsetse Fly Disease. C. Schilling.—p. 521.

Serology of Spirochete of Field Fever.—Karakašević shows that serologic method not only make possible the differentiation of *Spirochaeta icterohaemorrhagiae* from morphologically identical forms of *Leptospira* but also reveal that the antigen apparatus of the different strains of Weil's spirochete is not uniform but consists of various factors, that is, it is composed of so-called partial antigens. The author investigated to what extent such antigenic deviations are found in other types of spirochetes. He reports his observations on a number of strains of *Spirochaeta grippotyphosa*, which Rimpau obtained from the blood of patients with field (or harvest) fever. Reports on this type of spirochetal fever appeared in the *Münchener medizinische Wochenschrift* (85:1977 [Rimpau] and 1979 [Joerdens] Dec. 23, 1938); the article by Joerdens was abstracted in THE JOURNAL Feb. 18, 1939, page 678. The author made comparative serologic tests on strains of the spirochete of field fever, on strains of the spirochete of Russian water fever and on a spirochetal strain obtained from Sumatra. In this connection he points out further that the mud fever epidemic which occurred during 1926-1927 in the region of the Oder was also of spirochetal origin. Other investigators had proved that the spirochete which causes Russian water fever is serologically differentiable from that causing Weil's disease and that the so-called field or harvest fever is identical with the Russian water fever as well as with the so-called mud fever. Thus it seems that the latter forms of leptospirosis is comparatively widely disseminated. It differs from Weil's disease in that it does not cause icterus; its correct diagnosis requires serologic tests, and if these are not made it may be confused with influenza. The author describes his serologic studies on the aforementioned strains of spirochetes and records the results of his tests in tables. He found that the causal organism of field fever (*Spirochaeta grippotyphosa*) has no uniform antigen apparatus but that the antigen is composed of several factors, so-called partial antigens. So far he has succeeded in isolating two different type specific antigens which usually concur but which may also occur alone. The antisera obtained by the immunization of several rabbits with the same strains of *Leptospira* differ in antigen content toward the same homologous strains. The transmitted action of these immune sera on heterologous strains, however, apparently is greatly or entirely independent of the individual peculiarities of the animal organism but goes parallel to the height of the titer (toward the homologous strain).

Zeitschrift für Kinderheilkunde, Berlin

61: 265-422 (Oct. 5) 1939. Partial Index

- Pathogenesis of Hydrocephalus Internus: Comparison of Neurologic, Roentgenologic and Anatomic Aspects. W. Brenner.—p. 265.
Essential Hypochromic Anemia During Childhood. R. Garsche.—p. 302.
Artificial Feeding of Nurslings. G. Malyoth.—p. 316.
Changes in Antitoxin Titer in Protective Inoculation Against Diphtheria. O. Ernst and F. Allin.—p. 351.
Some Problems in Care for Prematurely Born Infants. A. Meier.—p. 355.
*Observations on Relations Between Rickets and Tetany. E. Hennig.—p. 379.
Pneumonia in Children. J. Duken.—p. 397.

Relations Between Rickets and Tetany.—Hennig reports studies on the chemical composition of the blood of 149 rachitic nurslings. The blood specimens were withdrawn in the morning, after no food had been taken for at least six hours. The calcium

values in the serum were determined according to Clark's method and the organic phosphorus was estimated according to the colorimetric method of Bell and Doisy. All children were given repeated examinations. The investigations revealed that only twenty-five (17.8 per cent) of the children had a purely rachitic disturbance of the metabolism. The remaining 115 children (82.2 per cent) had also tetany. In thirty-six children the tetany was latent, in seventy-nine it was manifest. These figures indicate that the incidence of tetany has greatly increased in recent years. It was observed also that pure rickets as well as the combination of rickets and tetany had the greatest incidence during the same months (April and May). The anorganic phosphorus in the serum exceeded 4 mg. per hundred cubic centimeters in only 40 per cent of the children with tetany; in 60 per cent of the children it was within the range of the rachitic values. Some of the children had values which corresponded to the lowest ones in pure rickets. The absolute (or relative) "phosphate stasis" (of Freudenberg and György) is thus not an obligatory symptom of tetany and it cannot be of essential significance in the development of the symptoms of tetany. The author shows that the results of his studies contradict not only the theory of Freudenberg and György, according to which tetany is a condition that develops during the cure of rickets, but also the theory of Rominger and Meyer, according to which tetany develops as the result of a too hasty cure of rickets. That rickets and tetany have their maximum during the same months and other factors which the two disorders have in common indicate that the two conditions depend on a common superordinated disturbance. Moreover, tetany existed in 82.2 per cent of the children with untreated rickets and it is unlikely that in all these children rickets was in the process of being cured.

Zeitschrift für Krebsforschung, Berlin

49: 217-340 (Sept. 23) 1939. Partial Index

- Ferment Problem and Cancer. A. von Christiani.—p. 221.
 Heredity of Carcinoma. W. Denk.—p. 237.
 Irradiation of Advanced Cancer and Social Indications in Cancer Therapy. Leb.—p. 248.
 Present Status of Surgical Treatment of Laryngeal Carcinoma. H. Marschik.—p. 250.
 Carcinoma of Vallecula. E. Wessely.—p. 274.
 *New Restorative Operation Following Partial Extirpation of Larynx. Brünings.—p. 278.
 Demarcation of Indications for Surgical Treatment and Irradiation in Treatment of Cancer. L. Schönbauer.—p. 287.
 Etiology of Tumors. F. Kogl.—p. 291.

Restorative Operation After Partial Extirpation of Larynx.—According to Brünings, the severe mutilations resulting from the operations for advanced carcinoma of the larynx represent a great disadvantage of these methods. He thinks that in case of total extirpations these defects (lack of natural respiration and of voice) are probably unavoidable but that in the partial resections (typical lateral resection, two thirds resection and resection of frontal half) it should be possible to restore the respiratory tract and the voice by a plastic operation. In developing such a method he decided to use as a temporary tube-shaped supporting prosthesis a spiral of silver wire. The wire is from 0.3 to 0.6 mm. thick and the internal diameter of the spiral measures from 6 to 14 mm. The author discusses the advantages of such spirals in plastic operations and describes how they are introduced and secured. Further he describes and illustrates the cutting of the flaps that are joined over the spiral in order to repair the defect. He employed this restorative procedure in fourteen cases not only after lateral extirpations but even in some cases in which almost two thirds extirpation had been done. The plastic repair was never made until at least from six to twelve months had elapsed since the tumor operation. During this time, relapses were carefully watched for. The closure of the defect was accomplished in all of the cases in which the author resorted to his plastic method. The fact that in some of the cases more than three years has elapsed since the plastic operation indicates that its results are permanent and that fear of a subsequent stenosis by shrinkage of the plastically restored portion of the larynx or by atrophy of the skin with flutter and aspiration is not justified. The latter complication developed in one extremely emaciated patient two and one half years

after the intervention. The author stresses that the method is reliable and not dangerous and that it requires only average surgical skill. Its value becomes evident when it is considered that it removes the mutilation caused by the partial resection of the larynx, which is the most frequent intervention in inter-nal laryngeal cancer. In repairing the mutilation the restorative operation also removes the psychic, social, hygienic and professional disadvantages of the partial laryngeal resection. The author thinks that in view of this possibility of repair the partial resection will be used even more widely than it was formerly; for instance, it may replace not only laryngofissure with chordectomy but also the extremely mutilating total extirpation.

Zeitschrift für Tuberkulose, Leipzig

83: 65-256 (Oct.) 1939. Partial Index

- Problems of Pulmonary Tuberculosis in Children: Epituberculosis or Infiltration? H. Alexander.—p. 83.
 Systematic Occupation and Training in Plan of Treatment of Tuberculous Children. H. Alexander and Gerda Baumann.—p. 107.
 *Urinary Observations and Their Significance in Tuberculous Children. Aline Aicham.—p. 119.
 Significance of Form and Size of Tuberculous Cavities of Lung for Pulmonary Collapse Therapy. H. Arpe.—p. 126.
 Modification of Tuberculous Cavity by Contralateral Pneumothorax. A. Beckmann.—p. 137.

Urinary Observations in Tuberculous Children.—Aicham maintains that in all children with pulmonary as well as with extrapulmonary tuberculosis the urine should be examined at regular intervals not only for albumin but also for its reaction, specific gravity, sediment and bacteria. Urinary changes of some kind are quite frequent in children with a chronic disease and their interpretation usually requires prolonged observation in connection with the clinical course of the primary disease. The author reports the incidence and the character of the pathologic conditions of the urine in 549 tuberculous children. Slight deviations from the normal which lasted only a brief time were disregarded. Renal irritations caused by medicaments were likewise disregarded. In 106 of the cases the examination of the urine disclosed pathologic conditions which persisted for weeks, months or even years. In fifteen of these 106 children a final estimation of the urinary changes proved impossible. Analyzing the observations on the remaining ninety-one patients, the author takes up first twenty cases of cystitis, eighteen of which concerned girls and two boys. The disorder was chronic in the majority of the cases. Among the eighteen girls there were only four who were able to walk around (two with pulmonary and two with glandular tuberculosis). The others had various forms of tuberculosis of the bones, which confined them in a more or less fixed position. The general condition was never noticeably influenced by the cystitis. In thirteen cases of nontuberculous nephritis there always existed hematuria and cylindruria. The general condition was regularly impaired in the cases in which the nephritis had an acute onset, whereas in the chronic cases this was not the case. Following remarks about two cases of engorged kidney, the author says that in all the aforementioned cases the disorder was relatively benign. However, she thinks that in spite of the benign character these disorders require therapeutic consideration, particularly in the form of a bland diet with a low salt content. In the second part of her report she discusses the more numerous cases in which the urinary disorders were much more grave and in which they were directly related to the tuberculosis. In twenty-three cases toxic irritation of the kidneys was detected. It was also observed that renal tuberculosis is not a rarity during childhood, for of seven cases of renal tuberculosis three concerned children less than 11 years of age. That elimination of tubercle bacilli with the urine is possible in the absence of renal tuberculosis could be demonstrated in four cases. In two other cases there existed a genital in the absence of a renal tuberculosis. Amyloid degeneration of the kidneys, which occurs almost exclusively in fistulous bone tuberculosis, was observed in twelve boys and in one girl. The connection between tuberculosis and lithiasis is still a disputed problem; the author observed two cases of renal, two of ureteral and one of vesical lithiasis among the tuberculous children.

Zeitschrift für Urologie, Leipzig

33: 625-660 (No. 10) 1939

- Conservative Renal Surgery. W. Heckenbach.—p. 625.
 *Development of Epididymitis Following Trauma. R. Frühwald.—p. 650.
 Congenital Renal Hypoplasia. L. Zeiss.—p. 652.

Epididymitis Following Trauma.—Frühwald reports observations which he made on persons who developed epididymitis after trauma. He describes nine cases. All these patients stated that before the trauma they had been free from disturbances of the urinary apparatus. X-ray examination of the urinary apparatus disclosed pathologic changes in the prostate of seven of the nine patients. The author believes that the streak-like shadows indicate dilated passages of the prostate and that the round or roundish shadows are abscesses of the prostate. He thinks that from these prostatic foci the infection spread to the epididymis and that these cases prove once more that even in the nonspecific forms of epididymitis after trauma the cause may be found in inflammatory changes of the posterior urethra and its adnexa.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 5333-5446 (Nov. 11) 1939. Partial Index

- Kala-Azar and Treatment with Antimony. J. L. C. Overbosch.—p. 5335.
 Experiments with Tampons and Membranes Prepared from Collagen. H. Periz.—p. 5343.
 *Investigations on Influence of Artificial Heliotherapy (Quartz Lamp) in Vacation Colony. H. Lugt, P. Lakeman and N. Lubsen.—p. 5349.
 Determination of Blood Volume by Means of Blue T. 1824. E. Lopes Cardozo.—p. 5357.

Irradiation with Quartz Lamp in Vacation Colony.—Lugt and his collaborators report that children who were in a vacation colony at a seaside resort during the winter months were daily exposed to ultraviolet radiation. Quartz lamps were set up in the room where the children were playing, dressed in swim suits. On the first day they were subjected to this irradiation for ten minutes. The period of irradiation was extended daily by five minutes until forty-five minutes had been reached. Otherwise the children were given the usual treatment. They had been selected for the six weeks stay in the vacation colony by the school physician; all of them were weak but healthy. In order to determine a possible influence of the quartz lamp irradiation the authors examined the hemoglobin content and the weight of children who had not received irradiations and in those who had. Studies were made on five groups (a total of 326 children). It could not be demonstrated that the irradiation augmented the hemoglobin content. As regards the increase in weight, the favorable influence of irradiation must be doubted. Some of the children were reexamined three weeks after they had left the vacation colony and it was found that the hemoglobin content was noticeably greater in the irradiated children than in those who had not been irradiated. At any rate there are indications that other influences such as good food and change of surroundings predominate over the possible influence of quartz lamp irradiations. The authors were able to confirm that the augmentation in the hemoglobin content was greatest in the children who were admitted to the colony with a low content.

Acta Pædiatrica, Stockholm

27: 1-136 (Oct. 31) 1939. Partial Index

- Pneumonia Diagnosis in Early Childhood. C. Friderichsen.—p. 1.
 Studies on Effect of Intraperitoneal Blood Transfusion. J. Clausen.—p. 24.
 *Malignant Form of Gaucher's Disease. Cornelia de Lange.—p. 34.
 Cerebellar Form of Saturnine Encephalopathy. A. Biemond and S. van Creveld.—p. 51.
 Acute Lymphatic Leukemia in Unioval Twins: I. Etiology. H. Jelke.—p. 87.

Malignant Form of Gaucher's Disease.—De Lange reports a case of malignant Gaucher's disease. The infant was the third child born of healthy parents. The first child had died at the age of 6 months with symptoms typical of Gaucher's disease. Normal birth of the third child was followed in about two and one half months by a pathologic condition characterized by the child's persistence in holding his head and neck rigidly backward. The raising of his legs in routine care would evoke cries of pain. The case history in summary form discloses the following characteristics: cerebral phenomena of

a more or less extrapyramidal nature such as hypermobile spasms, opisthotonos and motor debility accompanied with mental sluggishness; significant enlargement of the spleen and liver with numerous yellow spots macroscopically visible leukopenia and thrombopenia, and febrile elevations that could not be accounted for. Among the congenital abnormalities was found a peculiarity of cranial formation, deformed ears, partial albinism of the fundus oculi. No spleen puncture was performed. Lumbar puncture was nonpathologic. Puncture of the bone marrow of the tibia revealed no large cells. The child died when about 5 months old of dysphagia, infection of the upper respiratory organs and general cachexia. The clinical picture of congenital malignant Gaucher's disease dominated by phenomena of the central nervous system which may vary. The following are indicated: a normal birth followed by hypertonia, opisthotonos, respiratory difficulties, splenohepatomegaly, skeletal normality under x-ray inspection and motor inhibitions. Convulsions, Kernig's sign, thrombopenia, convergent strabismus and irregularity of the fundus oculi constitute divergent features. According to the author the reported cases number fifteen, all found in the same families. More extensive cerebral examinations are desirable when this disease is found and greater attention to congenital, physical abnormalities. The prognosis is highly unfavorable. Congenital malignant Gaucher's disease has rapid fatal evolution.

Nordisk Medicin, Helsingfors

4: 3237-3290 (Nov. 4) 1939. Partial Index

Hygiea

- *Renorenal Reflex. O. Sandström.—p. 3273.
 Statistic Method for Experiments in Therapy of Psychoses: I. Metrazol Treatment With and Without Convulsions. S. Stenberg.—p. 3278.

Renorenal Reflex.—In the first of Sandström's cases, with concrement in the left ureter, there was a renorenal reflex in the form of a transitory complete cessation of secretion from the contralateral kidney, and in the second case a similar renorenal reflex occurred after trauma of the opposite kidney. He says that these two cases together with the third, in which bilateral stopping of secretion and complete anuria were due to a unilateral ureter concrement, illustrate the role of the vasomotor nerves in the origin of such pathophysiologic conditions. In the first case there was also a sensitive renorenal reflex in contralateral attacks of pain. The physiologic action of the roentgen rays in the treatment of anuria was seen in the third instance, in which the reflex angiospasm in the kidneys ceased on irradiation. The therapeutic effect of the roentgen rays seems to support the conception of the anuria as primarily dependent on a bilateral cessation of secretion through vasomotor nerves analogous to the unilateral disturbances in secretion in the first two cases.

4: 3291-3356 (Nov. 11) 1939

Hygiea

- Complications Due to Sulfonamide Derivatives: Fatal Case of Granulocytopenia. M. Sjöholm.—p. 3339.
 *Atrophy of Spleen. N. G. Nordenson.—p. 3342.
 Unusual Form of Postoperative Parathyroidal Insufficiency. K. Östling.—p. 3344.
 Finger Prostheses Made by Vulcanizing Together Hard and Soft Rubber. S. Örell.—p. 3346.

Atrophy of Spleen.—Nordenson asserts that when the spleen is pathologically reduced in size there may be splenic aplasia, hypoplasia or atrophy. He describes a case with typical clinical picture of atrophy of the spleen, having a history of marked disturbances in digestion with periods of diarrhea alternating with periods of normal feces, increased urobilin content in the urine, a strongly positive Takata reaction, hyperchromatic megalocytic anemia, leukopenia and a mild thrombopenia. In all differential counts a shift to the left appeared, with abundant red blood corpuscles containing Jolly bodies and numerous normoblasts. The digestive disturbance is considered specially interesting, since atrophy of the spleen is so frequent in nontropical sprue (Engel) that a causal relation is assumed, and the author thinks that this case was probably one of nontropical sprue.

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